Child Deaths in Michigan

Michigan Child Death State Advisory Team
Fourth Annual Report

A report on the causes and trends of child deaths in Michigan based on findings from community-based Child Death Review Teams.

With recommendations for policy and practice to prevent child deaths.

The Michigan Family Independence Agency
Michigan Public Health Institute

Spring 2004

The Honorable Jennifer Granholm, Governor
Honorable Members of the Michigan Legislature

I am submitting this fourth annual report of child deaths in Michigan, in accordance with Public Act 167 of 1997. In 2001, nearly 1,200 community representatives in 57 counties met to conduct comprehensive reviews of 854 deaths. This report presents the findings from these review meetings. It also highlights trends in deaths to Michigan infants and children from 1990-2001. This report takes us through calendar year 2001.

In 2001, 1,760 children under the age of 19 died in Michigan. While this number is significantly lower than in prior years, the Michigan Child Death State Advisory Team believes that more than half of these deaths were preventable. These deaths could have been prevented through different actions by parents or other care givers, less risky behaviors by adolescents and/or earlier intervention taken by public support systems.

In addition to the large number of preventable child deaths, wide disparities in race and income persist. Black children died at a rate 2.2 times that of white children. This rate is even higher in deaths due to perinatal conditions, SIDS, fires, firearms and child abuse. Poor children are most often the victims.

Reducing preventable child deaths will require a combination of increased:
- education and information;
- community support structures; and,
- clarification and strengthening of certain laws and/or regulatory structures.

The Michigan Child Death State Advisory Team presents recommendations in this report based on their study of local review findings. These recommendations can improve the systems in our state that are designed to keep children healthy and protected. Many of these recommendations will require a long term commitment to children and funding that may not be possible until our state budget picture improves. As we continue our work, we hope this report furthers the awareness and action of state and local officials as well as the citizens of Michigan on how we can all work together to *keep kids alive.*

Thank you for your continued support in working to make Michigan a safe and healthy place for children.

Respectfully Submitted,

Marianne Udow

Marianne Udow
Director
Michigan Family Independence Agency

ACKNOWLEDGEMENTS

We wish to acknowledge the dedication of the nearly twelve hundred volunteers throughout Michigan who serve our state and the children of Michigan by serving on Child Death Review Teams. It is an act of courage to acknowledge that the death of a child is a community problem. Their willingness to step outside of their traditional professional roles, and examine all of the circumstances that lead to child deaths, and to seriously consider ways to prevent other deaths, has made this report possible.

Many thanks to the local Child Death Review Team Coordinators, for volunteering their time to organize, facilitate and report on the findings of their reviews. Because of their commitment to the child death review process, this annual report is published.

The Michigan Department of Community Health, Office of the State Registrar, Division for Vital Records and Health Statistics has been especially helpful in providing the child mortality data and in helping us to better understand and interpret the statistics on child deaths.

The Michigan Family Independence Agency provides the funding and oversight for the Child Death Review program, which is managed by contract with the Michigan Public Health Institute.

 Additional copies may be ordered from the Michigan Public Health Institute. This report is also available at www.michigan.gov/fia and www.keepingkidsalive.org.

CHILD DEATHS IN MICHIGAN

Michigan Child Death State Advisory Team

FOURTH ANNUAL REPORT

Spring 2004

MISSION

To understand how and why children die in Michigan,
in order to take action to prevent other child deaths.

SUBMITTED TO

The Honorable Jennifer Granholm, Governor, State of Michigan
The Honorable Ken Sikkema, Majority Leader, Michigan State Senate
The Honorable Rick Johnson, Speaker of the House, Michigan House of Representatives

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Funding for some of these positions supported in part by the Michigan Department of Community Health, the Centers for Disease Control and Prevention, the Wayne County Health Department and/or the Detroit Health Department.


Keeping
Kids
Alive©

Executive Summary

In 2001, 1,760 children died in Michigan. The death of a child is a profound loss. A careful review of each child's death can identify how best to respond to the death and how best to prevent another child from dying. The Michigan Child Death Review (CDR) program was established in 1995, and supported by legislation in 1997, to conduct these reviews.

Fifty-seven Michigan counties conducted comprehensive reviews of 854 child deaths in 2001.* Nearly 1,200 volunteers from 20 different disciplines participated. The teams found that if a person, persons or community had done something different, at least half of these child deaths may have been prevented. The teams used their findings to identify and implement changes in policy, services and programs that can prevent other deaths.

Public Act 167 of 1997 mandates the Michigan Child Death State Advisory Team to report annually on the total number of child deaths and their types and causes, review the local team findings and make recommendations for improvements to state policy and practice to prevent child deaths. This report summarizes the local findings and presents recommendations to our Governor and the Michigan Legislature for changes in state policy and practice that may prevent other deaths. The State Advisory Team recognizes that current state budget limitations may require that some recommendations be implemented in future years. The State Team hopes that future state budget deliberations consider these proposed enhancements to state services and programs.

Infant deaths due to low birth weight, prematurity or other birth-related event are the leading cause of death of all children ages 0-18. They represent 34.7% of all deaths. Other leading causes include congenital anomalies (13%), motor vehicle crashes (11%), SIDS (5.5%) and cancer (3.9%). By manner, natural deaths represent 73.1% of all deaths, accidents 19.3%, homicides 4.2%, suicides 2.8% and undetermined manner 0.6%. The leading causes of accidental deaths are motor vehicle, suffocation, fires, drowning and firearm accidents. By age groups, 60% of the deaths in 2001 were infants, 17% were teenagers ages 15-18, 14% were children ages 5-14 and nine percent were toddlers ages 1-4.

* Two types of data are used throughout this report. The reader is cautioned not to make a one-to-one comparison between the two types. The first type of data is *Michigan Child Mortality Data.* The 2001 data is the official count of Michigan residents, ages 0-18, who died between January 1, 2001 and December 31, 2001. The second type of data is *Child Death Review Team Findings.* These come from the reports submitted by counties of their child death reviews conducted between January 1, 2001 and December 31, 2001.

Overall, Michigan showed improvements with declines in the death rates from 2000 to 2001 of deaths due to motor vehicle crashes, fires, drownings, firearm accidents and non-firearm homicides. There were, however, increases in the rates of deaths due to suffocations, firearm homicides and suicides.

An estimated 40 infants and toddlers were the victims of child abuse homicides in 2001. These children were either severely beaten, shaken, neglected or abandoned as newborn infants. They were murdered by fathers, mother's boyfriends and mothers.

Most local teams attempt to review all manners and causes of child deaths. In 2001, teams reviewed 389 natural deaths, 320 accidents, 63 homicides, 44 suicides and 37 deaths of undetermined manner.

Teams found that 55% of all deaths reviewed in 2001 were definitely or probably preventable. Teams made 286 prevention recommendations and took action to implement 132 of these.

CDR team members found that working together results in a more coordinated response to the tragedy of a child death. Reviews led to improvements in death scene investigations, agency referrals and the delivery of services at the local level after the death of a child.

This report honors the memory of all of the children in Michigan who have died. The State Advisory Team issues this report with the hope that it will encourage additional efforts in local communities and among our state leaders to keep every child in Michigan safe and healthy.

The following sections describe specific findings and recommendations related to the review process and by cause of death.

The Child Death Review Process

Key Findings

There is no legislative mandate requiring participation in Child Death Review, yet nearly 1,200 volunteers in 57 counties conducted 854 reviews of deaths to children in 2001. Of the 26 counties that did not submit case reports in 2001, eight had no child deaths that year and of the remaining 18 counties, 17 had less than five deaths each.

Team members concurred with the official cause of death in all but 32 of the 854 cases. Their reviews led to further investigation in 44 cases. The medical examiner amended the death certificate in four cases. Further support services were provided to families after the review in 37 cases.

The quality of child death investigations continues to improve across the state, although teams report they need additional training and state support to ensure use of the *State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths*. The reviews also found wide disparities in the ability of counties to access forensic pathology resources.

Team members reported that confidentiality concerns prevented them from obtaining enough information for a comprehensive review in 21 of the 854 deaths.

Teams were very proactive in translating their findings to prevention. They made 286 prevention recommendations and took action to implement 132 of these. Many teams reported that they were unable to implement prevention initiatives due to funding constraints.

Several Michigan child health initiatives requested information on the review findings to improve child health programs and services, including the Michigan Asthma Coalition and the Michigan State University Adolescent Suicide Project. These groups were not able to access review findings, due to current confidentiality restrictions in the legislation.

Recommendations

1. The Michigan Legislature should ensure continued and enhanced resources to support the comprehensive review of CDR findings and trends, enhance local prevention efforts and training for CDR team members.

2. The Michigan Department of Community Health, the Family Independence Agency, Michigan State Police, Chiefs of Police, Michigan Sheriff's Association, Michigan Association of Medical Examiners and Prosecuting Attorneys Association should collaborate to ensure statewide utilization of Michigan standards for child death scene investigations using the *State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths* as a model.

3. The Michigan Department of Community Health should consider establishment of a state-based regional medical examiner system.

4. The Michigan Legislature should amend the Child Protection Law, the Mental Health Code and the Public Health Code so that CDR teams have timely and complete access to all information necessary for an effective review.

5. The Children's Action Network should encourage collaborative efforts between local and state CDR teams and Human Service Coordinating Bodies to make prevention funding a priority, based on review team findings.

6. The Michigan Legislature should amend the Child Protection Law so that the CDR Case Report may be used for research purposes, in accordance with current Child Protection Law research provisions.

Natural Infant Deaths Excluding SIDS, Ages 0-1

Key Findings

In 2001, 883 Michigan infants ages 0-1, died of natural causes, excluding Sudden Infant Death Syndrome (SIDS). CDR teams only reviewed 175 natural infant deaths excluding SIDS in 2001. The medical complexities of these deaths made it difficult for teams to review them, however, the specialized Fetal and Infant Mortality Review (FIMR) process can help teams effectively review these deaths.

Of the 175 cases reviewed, teams found that half of the babies died within 48 hours of birth. Prematurity and low birth weight were the major causes.

Twenty-one percent of the infants' families obtained grief and bereavement services.

Over 43% of the cases reviewed were infants categorized as low socio-economic status.

Cigarette smoking during pregnancy is a major risk factor for low birth weight, intrauterine growth retardation and infant death. In 26% of the cases reviewed, the mother admitted to having smoked during pregnancy.

Recommendations

1. The Michigan Department of Community Health should expand and continue technical and financial support to Fetal and Infant Mortality Review Programs in Michigan communities with high infant mortality rates and racial disparities.

2. The Michigan Department of Community Health should promote their *Grief and Bereavement* services to medical examiners, local public health departments and local child death review teams.

3. The Children's Action Network should lead an effort to develop a single comprehensive system of care and service that crosses agency boundaries and responsibilities and provides coordinated, culturally competent, community based services to families with children under age five.

4. Medicaid services should be expanded to include pregnant women up to 185% of the poverty level.

5. The Michigan Surgeon General should work with medical organizations and insurance companies to ensure that their providers:
    a. Provide preconception counseling.
    b. Ensure early access to and continuity of care for all pregnant women.
    c. Comply with state laws that require physicians to offer pregnant women client-centered counseling and voluntary HIV testing.

d. Screen all pregnant women and new parent patients for domestic violence and substance abuse and assure appropriate referral and service capacity.
e. Increase referrals to risk reduction programs such as Maternal Support Services (MSS) and Infant Support Services (ISS).
f. Offer or refer pregnant women and new parents to smoking cessation services.

Sudden Infant Death Syndrome

Key Findings

In 2001, 96 Michigan infants died from SIDS. This represents a 62% decrease from the 254 deaths in 1990. CDR teams reviewed 77 SIDS deaths in 2001.

SIDS is the sudden death of an infant under one year of age which remains unexplained after completion of an autopsy, a thorough death scene investigation and a review of the infant's medical history. If these three criteria are not followed, a SIDS diagnosis should not be made.

All 77 of the SIDS cases were designated as medical examiner cases. All of the cases had autopsies. The infant's medical history was not reviewed prior to the SIDS determination in about 56% of the cases. Five of the cases were not investigated by either law enforcement or the medical examiner.

Only two babies that died of SIDS were sleeping in cribs, alone and on their backs. The other 75 babies were sleeping in unsafe positions or places. Seventy-seven percent of the babies were not sleeping in cribs; 49% of the infants were sleeping on their stomach or side and 52% were sharing a bed with other children or adults.

Prenatal and second-hand smoke are considered very high risk factors for SIDS. Fifty-three percent of the infants that died due to SIDS were exposed to cigarette smoke, either prenatally or second-hand.

Recommendations

1. In every county, the prosecuting attorney, law enforcement agencies, medical examiner and the Family Independence Agency should jointly adopt and implement a child death scene investigation protocol using the *State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths* as a model.

2. The Michigan Department of Community Health and the Family Independence Agency should collaborate to implement a statewide campaign that promotes safe infant sleep environments and explicitly describes the dangers posed to infants in bed-sharing and other unsafe sleep environments.

3. The Michigan Department of Community Health should strengthen the prenatal smoking cessation program, especially as it relates to SIDS.

All Causes of Natural Child Deaths, Ages 1-18

Key Findings

In 2001, 306 Michigan children over age one died due to natural causes. This represents a 21% decrease from the 389 deaths that occurred in 1990. CDR teams reviewed 129 natural deaths to children over age one in 2001.

Respiratory/asthma, cerebral and cardiac conditions were the top three causes of death in this category for cases reviewed in 2001.

Recommendation

1. The Michigan Department of Community Health and the Family Independence Agency should support a partnership and the sharing of information between the Michigan Child Death Review Program and the Michigan Asthma Coalition to improve the diagnosis, treatment and prevention of childhood asthma.

Accidental - Motor Vehicle

Key Findings

In 2001, 193 Michigan children died in motor vehicle crashes. From 1990-2001, the number of motor vehicle crash deaths decreased 23%. CDR teams reviewed 178 motor vehicle deaths in 2001.

The number of teen passengers in a vehicle at the time of a crash is a major risk factor for young drivers. In the 76 fatal crashes where the driver at fault was under 18 years of age, teams found that 57% had one or more teen passengers.

Half of all the motor vehicle crash deaths reviewed were to child passengers in cars at the time of crash. About 26% of the deaths reviewed were to teen drivers.

Normal road conditions were reported in 62% of the crashes reviewed. Wet, icy or snowy road conditions were a factor in about 18% of the cases. Loose gravel roads were a factor in six percent of the cases.

Driver error, speeding and recklessness were the most frequent causes of the crash. Young drivers were more likely to cause a crash. The driver at fault was between 16 and 18 years of age in about 40% of the crashes.

A restraint was used correctly in only about 32% of the cases reviewed.

Recommendations

1. The Michigan Legislature should amend the current graduated licensing law to place limits on the number of teen passengers allowed in vehicles driven by teens with Level Two Intermediate Licenses. This limitation should apply at all times of the day.

2. The Michigan Department of Education should partner with the Office of Highway Safety Planning and the Michigan Department of Community Health to conduct a comprehensive review of driver education programs throughout the state to ensure that the curricula adequately address all high risk driving situations.

3. The Michigan Legislature should amend the Michigan Child Passenger law to:
    a. Require the use of a belt positioner for booster seats to protect children over age four and up to age eight and 80 pounds.
    b. Increase fines and points for those not following the law.
    c. Increase public awareness and education programs.

4. The Michigan Department of Community Health should enhance resources to encourage health care providers to provide anticipatory guidance to expectant and new parents on the proper installation and usage of child safety seats and booster seats.

Accidental - Suffocation and Strangulation

Key Findings

In 2001, 53 Michigan children died due to accidental suffocation and strangulation. The rate of infant death due to accidental suffocation and strangulation has increased 210% since 1990. CDR teams reviewed 54 accidental suffocation deaths in 2001.

Teams found that scene investigations were essential to help medical examiners distinguish between SIDS and suffocation deaths.

Forty-one of the 54 deaths were to infants who suffocated because of unsafe sleep environments. Twenty-five infants suffocated when a person overlaid them while sleeping. Sixteen infants suffocated in unsafe bedding such as blankets, pillows or mattresses.

Of the 25 deaths caused by overlay, 12 babies were sleeping with adults or other children in adult-style beds, 12 were sleeping with others on couches and one was on the floor.

The 16 children who suffocated in bedding were either smothered by blankets, pillows or other objects in their beds, or were found with their face wedged into their place of sleep. Of the 16 suffocations caused by unsafe bedding, seven babies were sleeping in adult beds, five were sleeping in a crib, one child was sleeping on a couch, one on an air mattress and one on the floor.

Recommendations

1. In every county, the prosecuting attorney, law enforcement agencies, medical examiner and the Family Independence Agency should jointly adopt and implement a child death scene investigation protocol using the *State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths* as a model.

2. The Michigan Department of Community Health and the Family Independence Agency should collaborate to implement a statewide campaign that promotes safe infant sleep environments and explicitly describes the dangers posed to infants in bed-sharing and other unsafe sleep environments.

Accidental - Fire and Burn

Key Findings

In 2001, 33 Michigan children died in accidental fires. This represents a 33% decrease from the number of accidental fire deaths in 1990. CDR teams reviewed 37 accidental fire deaths in 2001. About half of the victims were under five years of age.

Teams found that children playing with lighters, matches and candles caused 41% of the fire deaths.

In ten of the cases reviewed, there was no smoke alarm in the home. In six cases, the smoke alarm did not have a functioning battery.

Almost half of the deaths may have been prevented with working smoke detectors.

Twenty-one of 37 fire deaths reviewed occurred in wood-framed homes. Three deaths occurred in trailers.

Twenty-five of the 37 fire deaths reviewed involved multiple injuries or deaths.

Recommendations

1. The Michigan Department of Community Health and the Michigan State Police should collaborate to develop an awareness campaign on the increased risks of fatal house fires when children play with incendiary devices.

2. The Michigan Department of Community Health and the Michigan State Police should campaign to promote local efforts to increase the number of lithium-powered or hard-wired smoke detectors and sprinkler systems in residential dwellings.

3. The Michigan Department of Education should ensure that all school districts and daycare organizations offer fire safety education such as Risk Watch, especially in preschools and daycare settings.

Accidental - Drowning

Key Findings

In 2001, there were 30 accidental drowning deaths to children. From 1990-2001, the number of accidental drowning deaths decreased by about 29%. CDR teams reviewed 25 accidental drowning deaths in 2001.

Ten (40%) of the accidental drowning deaths reviewed occurred in swimming pools.

Three of the swimming pools were not completely fenced. Three children entered a gate to the swimming pool while unattended and in two of those cases the gate was not locked.

Recommendations

1. Enforce the Michigan Construction Codes that require local units of government to adopt and enforce pool-fencing regulations.

2. The Family Independence Agency's Office of Children and Adult Licensing should review current daycare licensing guidelines for barriers to pools, hot tubs or open bodies of water at regulated daycare homes.

Accidental - Firearm

Key Findings

In 2001, there were four accidental firearm deaths to children in Michigan. Since 1990, the number of accidental firearm deaths to children has decreased about 71%. CDR teams reviewed seven accidental firearm deaths in 2001.

In five of the seven cases reviewed, a child was handling the weapon. The child was not adequately supervised in five of the seven cases.

In four of the cases, the firearm was not locked in a cabinet. Five of the firearms did not have a trigger lock.

Recommendations

1. The Michigan Attorney General's Office should ensure statewide enforcement of the current laws that require:
    a. Federally licensed firearm dealers to provide, at the point of sale, written materials on gun safety and the proper storage of guns in homes with children.
    b. Federally licensed firearm dealers are not to sell a firearm in Michigan, without a commercially available trigger lock or other device, designed to disable the firearm and prevent it from discharging.

2. The Michigan Legislature should enact legislation that provides specific criminal penalties to adults who are negligent in the safekeeping of guns that are used to injure or kill children.

Accidental - Other Causes

Key Findings

In 2001, 27 Michigan children died due to other accidental causes such as poisonings, falls and electrocution. CDR teams reviewed 19 cases of "other" accidental deaths.

Homicide - Firearm and Weapon

Key Findings

In 2001, there were 46 child homicides caused by firearms and other weapons. Since 1990, this number has decreased 66%. CDR teams reviewed 38 firearm and weapon related homicides in 2001.

Almost 75% of the deaths were teenagers ages 15-18, and 68% were young, black males. Eighty-four percent were in Wayne County alone. The victims were poor in 74% of the cases reviewed.

The teams found that 34% of the persons shooting the child were acquaintances, 23% were strangers and eight percent were family members.

Recommendation

1. State agencies should partner with communities experiencing high rates of teen homicides to identify the neighborhoods most at risk, and implement comprehensive violence prevention interventions.

Homicide - Child Abuse and Neglect

Key Findings

In 2001, death certificate data indicates that 14 Michigan children were reported to have died due to child abuse and neglect. Based on that data, the number has decreased 36% since 1990. However, CDR and the Family Independence Agency data identified 40 child abuse and neglect deaths in 2001. CDR teams reviewed 16 child abuse and neglect homicides in 2001.

Recommendations

1. The Family Independence Agency should increase and improve the resources available to educate and support the medical community and other mandated reporters to understand, identify and report suspected child abuse and/or neglect.

2. The Michigan Department of Community Health, the Family Independence Agency and the Michigan Department of Education should collaborate in developing a nurse home visitation program targeting low-income first-time mothers based upon the successful "Nurse Family Partnership" model developed by Dr. David Olds.

3. The Family Independence Agency and the Children's Trust Fund should continue their Shaken Baby Prevention Campaign and expand the focus to include all physical assaults.

Homicide - Other Causes

Key Findings

In 2001, 12 Michigan children died due to causes of homicide other than firearm and weapon or child abuse and neglect. CDR teams reviewed nine cases in 2001 due to "other" causes of homicide.

Suicide

Key Findings

There were 49 child suicides in Michigan in 2001, 33 of these to white males ages 15-18. Most of the teens used firearms to kill themselves (26), followed by hanging (19) and poisoning (4).

CDR teams reviewed 44 teen suicide deaths. Teams found that most of the deaths occurred at the teens' homes, but two of the suicides reviewed occurred in jail and one occurred in a hospital.

For the 23 firearm suicides reviewed, 13 teens accessed guns that were not stored in locked cabinets. Only one of the guns was known to have had a trigger lock.

Teams identified a precipitating event in 28 of the cases reviewed. These included problems with significant others, teasing by other students at school, arguments with friends or family members and getting into trouble with the law.

Teams identified drugs as a risk factor in seven of the cases reviewed, and alcohol as a factor in four cases.

Seventeen teens had made prior verbal threats indicating they were considering suicide. Nine victims had known mental health problems but only eight had received mental health services. Three victims had previously attempted suicide.

Recommendations

1. The Michigan Surgeon General should lead the effort to develop an Adolescent Suicide Prevention and Services strategic plan in accordance with the *U.S. Surgeon General's Call to Action for Suicide Prevention.*

2. The Michigan Department of Community Health should conduct a statewide assessment of the capacity of children's mental health services to adequately assess and provide treatment to adolescents who exhibit signs of depression.

Undetermined Manner

Key Findings

In 2001, 11 Michigan children died of undetermined manner. CDR teams reviewed 37 child deaths of undetermined manner in 2001.

Twenty-nine cases included factors related to unsafe sleeping environments for infants.

Eighty-one percent of the cases reviewed involved children under the age of one.

Recommendations

1. In every county, the prosecuting attorney, law enforcement agencies, medical examiner and the Family Independence Agency should jointly adopt and implement a child death scene investigation protocol using the *State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths* as a model.

2. The Michigan Department of Community Health and the Family Independence Agency should collaborate to implement a statewide campaign that promotes safe infant sleep environments and explicitly describes the dangers posed to infants in bed-sharing and other unsafe sleep environments.

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Introduction

Introduction

1,760 children died in Michigan in 2001. At least 471 of these deaths could have been prevented.

The death of a child is a profound loss. Michigan lost 1,760 children ages 0-18 in 2001. These children died from natural causes, accidents, homicides and suicides. In some deaths, the manner was not determined. Although the total number of deaths has decreased every year, wide racial and income disparities continue to persist: poor, black children die at higher rates than other Michigan children in most categories of death.

The Michigan Child Death Review (CDR) Program supports the community-based comprehensive review of children's deaths, in order to help keep kids alive. The operating principle of child death review is that the death of a child is a community problem and the circumstances involved in most child deaths are too multi-dimensional for responsibility to rest in any one place. Child death review is a multi-disciplinary process that helps communities and the state better understand why children die and promotes the development of initiatives to prevent other deaths. Fifty-seven Michigan counties conducted 854 reviews in 2001. They found that if a person, persons or community had done something different, at least 471 of these children would likely be alive today.

This is the fourth annual *Child Deaths in Michigan* report. Since its inception, CDR teams have reviewed 3,072 deaths. Nearly 1,200 volunteers, including professionals from more than 20 different disciplines, review the deaths to identify and implement changes in policy, services and programs.

The Michigan Child Death State Advisory Team, mandated by Michigan Public Act 167 of 1997, studies the findings of the local review teams in order to develop recommendations for improvements to statewide policy and practice to prevent deaths to children in our state. This report summarizes those findings and also offers suggestions for parents and caregivers on how they can best protect their children from harm.

Section One:

The Michigan Child Death Review Process

Conducting a Local Review

Review Outcomes

State Support

The Child Death State Advisory Team

Recommendations for Policymakers Regarding the CDR Process

Conducting a Local Review

Purpose

CDR brings together multi-disciplinary groups of people to conduct comprehensive reviews of child deaths in order to identify the many factors that may have led to each death. The reviews motivate communities to take action in order to prevent other similar tragedies.

There are at least 1,192 professionals *volunteering* their time to participate on local review teams.

Membership

There is no legislative mandate to participate on a review team, yet 1,192 local professionals demonstrated a tremendous volunteer commitment to the review process in 2001. Statute does require that where teams are established, they include at least the county medical examiner, the prosecuting attorney, a law enforcement officer and representatives from local public health and the Family Independence Agency. All of the CDR teams meet this requirement for core team membership, and most have much broader representation. The average team size is 15 members.

Table 1
Agency Staff Represented on Local CDR Teams, 2001

Agency	Number on Teams
Law Enforcement	310
Local Public Health	160
County Family Independence Agency	117
Medical Examiners' Offices	111
Hospitals	106
County Prosecutors' Offices	101
Community Mental Health	55
Emergency Medical Services	48
Health Clinics and Physicians	37
Schools	34
Courts	26
Other Community Providers	18
Other Social Services	14
Human Service Collaboratives	12
Fire Departments	5
Churches	4
Funeral Homes	4
Hospice	3
Tribal Health/Social Services	3
Other	24
Total	1192

It is especially important for the core agencies and those who are involved in the deaths in some way to be present during reviews. Therefore, certain disciplines may attend meetings more frequently than others. For example, in 2001, a member of law enforcement was present for 82.3% of the 854 reviews conducted statewide. Other agency representation broke down as follows:

Table 2
Percent of Agency Staff Participating in 2001 CDR Case Reviews

Agency	Percent
Law Enforcement	82.3
Local Public Health	81.7
County Family Independence Agency	79.2
Medical Examiners' Offices	71.4
County Prosecutors' Offices	66.6
Hospitals	35.2
Community Mental Health	27.2
Emergency Medical Services	22.0
Schools	9.8
Health Clinics and Physicians	8.5
Courts	4.6
Other Social Services	4.3
Early On; FIMR	2.9
Churches and Funeral Homes	1.9
Tribal Services	1.9
Human Service Collaboratives	1.5
Fire Departments	0.9
Daycare Licensing	0.7
All Others	7.7

Team Coordination

In every county, a team member volunteers to coordinate the team's activities. The role of the coordinator includes selecting cases for team review, communicating with team members, coordinating and facilitating the meetings and completing case reports.

There are no state program funds supporting the local coordinator activities. In some cases, the role of coordinator is shared. Many coordinators have served their teams since they were established. Annual meetings are held for coordinators at regional locations throughout the state. The coordinators represent many different agencies including:

Table 3
Agencies Coordinating CDR Teams in 2001*

Agency	Number
Local Public Health	25
County Family Independence Agency	16
Medical Examiners' Offices	9
County Prosecutors' Offices	9
Law Enforcement	5
Human Services Collaboratives	5
Physicians	3
Community Mental Health	2
Hospitals	2
Other Social Services	1

*Some coordinators serve on more than one CDR team; some have more than one coordinator.

Cases Selected for Review

Eight communities conduct more intensive reviews of infant deaths through the Michigan Fetal and Infant Mortality Review.

The teams attempt to review all deaths of children under the age of 19, with the exception of the largest counties in Michigan (Wayne, Oakland, Kent, Ingham, Muskegon, Macomb and Genesee). Because of their high numbers of child deaths, these teams select cases that fall under the jurisdiction of the medical examiner for more intensive review. This would include sudden deaths, accidents, homicides and suicides.

Teams often find it difficult to review natural infant deaths, because the maternal and perinatal health histories are often not available and the cases tend to be more medically complex. Eight Michigan communities conduct more intensive reviews of infant deaths through the Michigan Fetal and Infant Mortality Review (FIMR) program described in Section Eight of this report.

In 2001, 57 counties conducted death reviews. Of the 26 counties not submitting case reports in 2001, eight had no child deaths in that year, and 17 of the remaining 18 counties had less than five deaths each.

Frequency of Meetings

Teams vary on how often they meet, depending upon the number of deaths they review. Teams attempt to review the deaths of children that occurred since their last meeting. Most mid-sized counties meet bi-monthly or monthly. Rural counties with few deaths may meet only when a death occurs; some smaller counties may meet quarterly. Some teams meet when there are no deaths to review. The coordinators report that these meetings enable the team to focus on prevention planning efforts and/or to review non-fatal but serious injury events to children. Some teams may meet within 24-48 hours of a death to aid in the early investigation.

Access to Information for an Effective Review

The Office of the State Registrar, Division for Vital Records and Health Statistics has facilitated a process that enables teams to more readily obtain notification of their child deaths, especially those occurring in counties other than the county of residence. Counties that border other states still find it difficult to obtain information from those states in a timely manner.

The 1997 legislation for CDR provides teams the authority to meet and requires that the meetings are confidential, but it does not address access to records. Many teams continue to report difficulty in gaining access to the information necessary for a complete and quality review, especially health and medical information on the child. Much of the information missing in this report is due to team members' inability to gather and/or share information. Teams also reported that confidentiality concerns prevented them from exchanging information in 21 of the reviews.

At the Review

An effective review begins with all participants sharing relevant information that their agency has regarding the circumstances surrounding the child's death. Team members ask for clarification as needed. The team discusses each death, considering the following questions:

- Is the investigation complete?
- Are there services we should be providing?
- Are there other children at imminent or serious risk of harm?
- What were the risk factors involved in the death?
- Are there agency policies and practices that should be changed?
- What action are we going to take locally to prevent another death?
- Who should take the lead to implement our recommendations?
- What recommendations should we make to the state?

Review Outcomes

Team members review the cases to identify the risk factors involved in order to identify prevention initiatives. The reviews also help members better understand how and why a child died.

In 2001, team members concurred on the manner and cause determination of deaths in all but 32 cases. Their reviews led to further investigation in 44 cases. The medical examiner amended the death certificate in four cases. Additional support services were provided to families as a result of the review in 37 cases.

State Support

The Family Independence Agency provides funding to the Michigan Public Health Institute (MPHI) to manage the CDR program. This funding supports the following:

Additional support services were provided to families as a result of the review in 37 cases.

Technical Assistance and Consultation to Local Teams

Staff regularly attend local review team meetings, assist teams in identifying deaths, accessing information and in organizing and facilitating effective meetings. Staff provide follow-up materials and support to the teams as well as resources on death investigation, services, prevention and procurement of information on specific causes of deaths. CDR staff manage the Child Death Review Reporting System and assist counties in utilizing the online database.

Training for Team Members

The sixth annual *Team Member Training* was held in May 2002. More than 160 team members attended. Currently, more than 40% of team members have attended the annual two-day training event. All of the trainers are Michigan experts in areas related to child fatalities.

The Michigan CDR process is a national model because of its focus on the prevention of deaths. In 2001, CDR staff presented at more than 25 national, state and local conferences, meetings and trainings to educate and increase interest and participation in the review process. As a result of this proactive approach, the Michigan CDR program was awarded a grant from the federal Maternal and Child Health Bureau of the Health Resources Services Administration to act as a national resource center for child death review programs. In this capacity, technical assistance was provided to several states in developing or expanding their child death review programs.

The Child Death Review Reporting System

Local teams complete a confidential case report on each death reviewed and submit this report to the state CDR office using a web-based system. Findings are aggregated and shared with the state team and form the basis for this report. When appropriate, and in accordance with state statute, general findings from the local teams are also shared with the public.

Linking Local Programs, State and Other Resources

CDR has worked closely with MDCH in implementing the FIMR program. This has helped to ensure that all communities with FIMR and CDR work together to encourage and enhance prevention efforts in communities with high infant mortality rates and/or racial disparities.

In 1995, CDR, the Michigan State Police, the Michigan Association of Medical Examiners, the Michigan SIDS Alliance, the Prosecuting Attorneys Association of Michigan and MDCH worked with a number of other state and local organizations to develop the *State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths*. These protocols have been endorsed and distributed throughout the state. They are now a required standard for death investigations in a growing number of counties. CDR continues to make the protocols available, support training for investigators and encourage their use.

CDR has collaborated with a number of other state programs to encourage and support local and state prevention initiatives.

The program has collaborated with a number of other state programs to encourage and support local and state prevention initiatives. Collaborations have occurred with the SAFE KIDS Campaign, the Children's Trust Fund, Michigan SIDS Alliance / Tomorrow's Child and the Michigan State Police, Office of Highway Safety Planning. CDR reports regularly to the Governor's Task Force on Children's Justice.

Support for Local Prevention Efforts

CDR staff work closely with communities in identifying prevention strategies and locating resources. By facilitating a number of networking opportunities, staff encourage communities to share information on successful prevention efforts with other CDR teams. A staff prevention coordinator works directly with communities who need assistance in designing programs and obtaining resources.

The Child Death State Advisory Team

The Michigan Child Death State Advisory Team met four times during 2001. Meetings are designed to review findings from local teams, provide opportunities for local teams to present their experiences and to prepare this report with recommendations.

Through federal legislation signed into law in 1999, the Child Death State Advisory Team became one of the three mandated Citizen Review Panels for the Family Independence Agency. These panels are required for states that receive federal Child Abuse Prevention and Treatment Act funds. The panel reviews child abuse-related fatalities in Michigan and makes recommendations to the Family Independence Agency for improvements in the state's child protection system. A subcommittee of the Child Death State Advisory Team met four times in 2001 to plan and begin their reviews of child abuse and neglect-related fatalities. A separate report, *The Michigan Citizens Review Panel on Child Fatalities Annual Report*, is submitted to the Director of the Family Independence Agency from this subcommittee.

Recommendations for Policymakers Regarding the CDR Process

1. The Michigan Legislature should ensure continued and enhanced resources to support the comprehensive review of CDR findings and trends, enhance local prevention efforts and training for CDR team members.
2. The Michigan Department of Community Health, the Family Independence Agency, Michigan State Police, Chiefs of Police, Michigan Sheriff's Association, Michigan Association of Medical Examiners and Prosecuting Attorneys Association should collaborate to ensure statewide utilization of Michigan standards for child death scene investigations using the *State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths* as a model.
3. The Michigan Department of Community Health should consider establishment of a state-based regional medical examiner system.
4. The Michigan Legislature should amend the Child Protection Law, the Mental Health Code and the Public Health Code so that CDR teams have timely and complete access to all information necessary for an effective review.
5. The Children's Action Network should encourage collaborative efforts between local and state CDR teams and Human Service Coordinating Bodies to make prevention funding a priority based on review team findings.
6. The Michigan Legislature should amend the Child Protection Law so that the CDR Case Report may be used for research purposes, in accordance with current Child Protection Law research provisions.

Section Two:

A Summary of Michigan Child Mortality Data & Child Death Review Team Findings

A Note on the Data Used in this Report

Michigan Child Mortality:
A Summary of 1990-2001 Data from Death Certificates

Michigan Child Death Review:
A Summary of 2001 from CDR Case Reports

A Note on the Data Used in this Report

Two types of data are used throughout this report. The reader is cautioned not to make a one-to-one comparison between the two types.

The first type of data is *Michigan Child Mortality Data.* The 2001 data is the official count of Michigan residents, ages 0-18, who died between January 1, 2001 and December 31, 2001. This data is compiled using the *Michigan Resident Death File*, which is based on *Michigan Death Certificates*, the official record of death in Michigan. Death certificates are completed at the county level and submitted to the Division for Vital Records and Health Statistics, Office of the State Registrar at MDCH. MDCH provided the CDR program with the data file, *Michigan Resident Death File*, for the period 1990-2001. The death rates were calculated using age-specific U.S. Census population and estimates for Michigan. Child death rates are computed as the number of child deaths ages 0 to 18 years per 100,000 population in that age group. Infant mortality rates are computed as the number of infant deaths ages 0 to 12 months per 1,000 live births. Children who died out of state are not included in the data. Therefore, the numbers differ slightly from those published on the MDCH website.

The second type of data is *Child Death Review Team Findings.* The findings are compiled from *CDR Case Reports.* These reports are completed at the county level during a review of a child's death, then sent to the CDR state office. The reports include children whose deaths were reviewed between January 1, 2001 and December 31, 2001. They include 26% of children who died before 2001. Children who died in late 2001 were probably reviewed in 2002 and those deaths will be included in the fifth annual CDR Report.

In this report, the data will be presented and discussed by grouping the deaths according to manner of death. Manner refers to the circumstances of the death. There are five categories of manner: Natural, Accident, Homicide, Suicide or Undetermined. Within each category of manner, there can be many causes of death. Cause refers to the actual disease, injury or complications that directly caused the death of the individual.

Michigan Child Mortality: A Summary of 1990-2001 Data From Death Certificates

All Deaths, Ages 0-18

In 2001, 1,760 children died in Michigan of all causes.

Figure 1
Michigan Child Deaths, Ages 0-18, 1990-2001

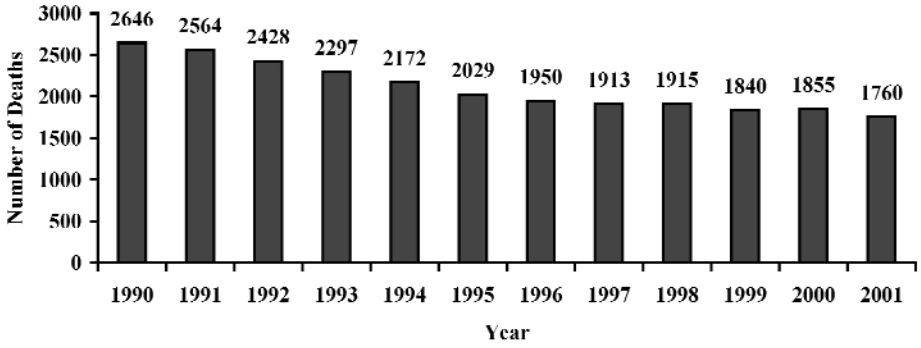
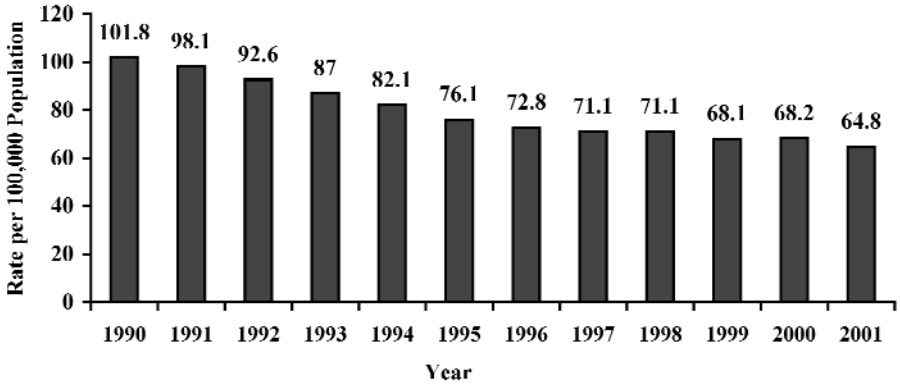


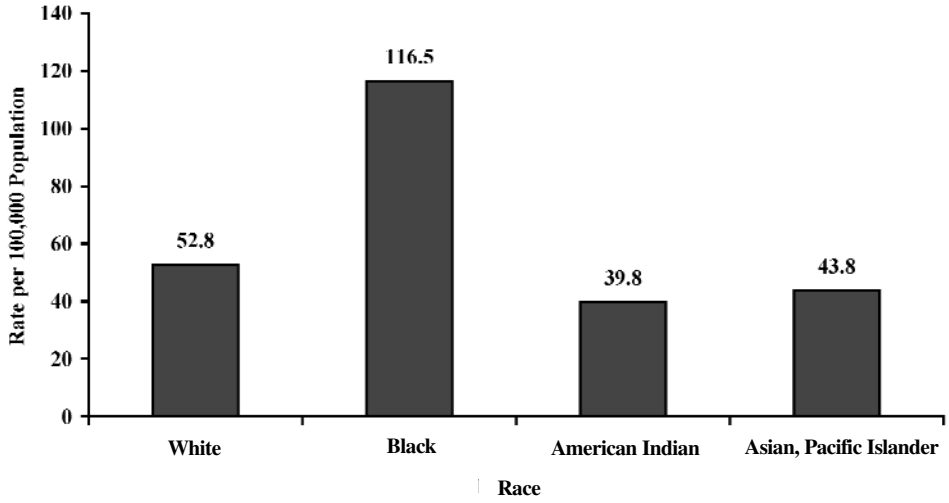
Figure 2
Michigan Child Death Rates, Ages 0-18, 1990-2001



Black children die at greatly disproportionate rates than other children. In 2001, the death rate for black children was 2.2 times that for white children. However, the rate for black children declined more rapidly from 1990 to 2001 than the rate for white children. In that decade, the death rates decreased about 48% for black children and about 31% for white children.

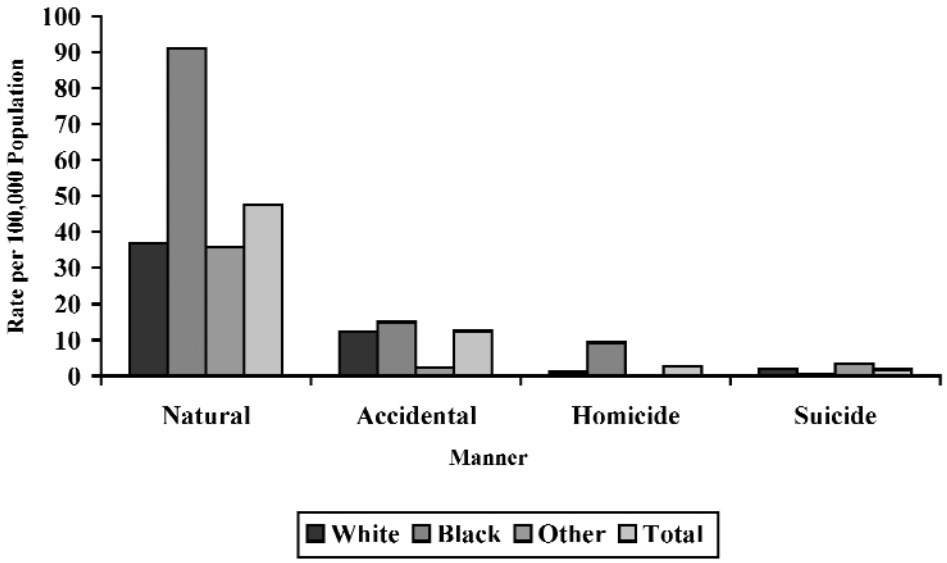
Figure 3
Michigan Child Death Rates by Race, Ages 0-18, 2001

In 2001, the death rate for black children was 2.2 times that for white children.



Rates for race groups, particularly American Indians and Asian or Pacific Islanders, should be interpreted with caution because these groups tend to be misidentified on both the death certificate and in the population census.

Figure 4
Michigan Child Death Rates by Manner and Race, Ages 0-18, 2001



Between 1990 – 2001 there was a decrease in child death rates among all race-sex groups, with the largest average decrease in black males (48.3%).

Boys continue to die at higher rates than girls. In 2001, males died at a rate of 1.5 times that of females. The child death rate for males declined similarly to that for females, 36% and 37% respectively. When considering changes to race-sex groups between 1990 and 2001, there were decreases in child death rates among all race-sex groups, with the largest average decrease in black males (48.3%). There was a 46.8% decrease in the child death rate for black females, 30.3% for white males and 31.9% for white females. Numbers for other race-sex groups were too small for comparisons.

Table 4
Number and Percent of Michigan Child Deaths by Sex, Ages 0-18, 2001

Sex	Number	Percent
Male	1056	60.0
Female	699	39.7
Unknown	5	0.3
Total	**1760**	**100.0**

The majority of child deaths occur to infants, and most of these occur within the first 28 days of life. In 2001, about 60% of all child deaths in Michigan were to infants and almost 69% were to children under the age of five.

Figure 5
Michigan Child Deaths by Age, 2001

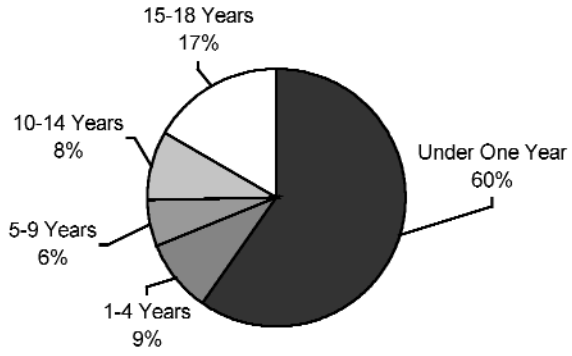


Figure 6
Michigan Child Deaths by Manner, Ages 0-18, 2001

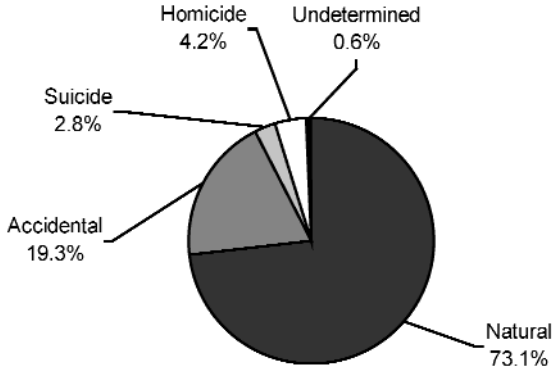


Table 5
Manner and Cause of Michigan Child Deaths, Ages 0-18, 2001

Manner and Cause	Number	Percent
Natural	**1287**	**73.1**
Perinatal Conditions	611	34.7
Congenital Anomalies	228	13.0
SIDS	96	5.5
Neoplasm	69	3.9
Nervous System Disease	59	3.4
Circulatory System Disease	57	3.2
Respiratory System Disease	57	3.2
All Other Natural Causes	110	6.3
Accidental	**340**	**19.3**
Motor Vehicle	193	11.0
Suffocation and Strangulation	53	3.0
Fire and Burn	33	1.9
Drowning	30	1.7
Firearm and Weapon	4	0.2
All Other Accidents	27	1.5
Homicide	**72**	**4.1**
Firearm and Weapon	46	2.6
Child Abuse and Neglect	14	0.8
All Other Homicides	12	0.7
Suicide	**49**	**2.8**
Firearm and Weapon	26	1.5
Suffocation and Strangulation	19	1.1
All Other Suicides	4	0.2
All Undetermined and Unknown	**12**	**0.7**
Total	**1760**	**100.0**

Infant Deaths, Ages 0-1

Infant mortality is a critical indicator of a community's socio-economic well-being and health. It also reflects the overall state of maternal health as well as the quality and accessibility of primary health care available to infants and pregnant women.

The 2001 Michigan infant mortality rate is 7.9 deaths per 1,000 live births. This is above the U.S. infant mortality rate of 7.0.

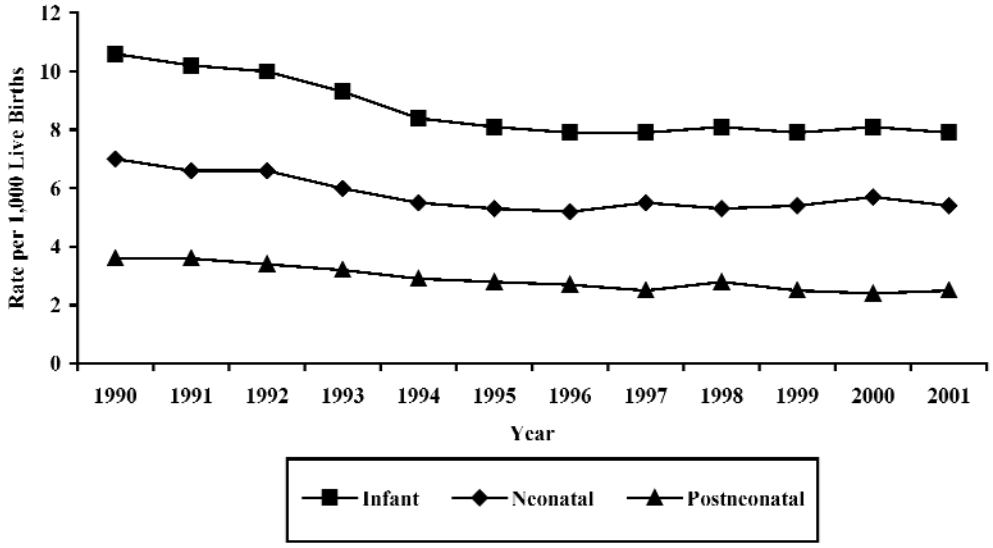
In 2001, 1,051 Michigan infant deaths were reported. Infant mortality is calculated differently from other age death rates, and is computed as the number of infants, ages 0-12 months, who die per 1,000 live births. The 2001 Michigan infant mortality rate is 7.9 deaths per 1,000 live births. This is above the U.S. infant mortality rate of 7.0.

Most infant deaths occurred during the first 28 days of life, known as the neonatal period. The 2001 neonatal mortality rate was 5.4 infant deaths per 1,000 live births, a decline of 23% since 1990. The remaining infant deaths occur during the postneonatal period, between 29 and 364 days of age. The postneonatal mortality rate was 2.5 per 1,000 live births and declined 31% since 1990.

The infant mortality rate in Michigan continues to decline. The 2001 infant mortality rate was 26% less than the 1990 rate of 10.6 infant deaths per 1,000 live births.

The 2001 infant mortality rate is 26% less than the 1990 rate of 10.6 infant deaths per 1,000 live births.

Figure 7
Michigan Infant Mortality Rates, 1990-2001



Infant mortality has declined for both black and white children since 1990, but substantial disparities remain. Black infants are almost three times more likely to die before they reach their first birthday than white infants (16.9 versus 6.0 in 2001).

Figure 8
Michigan Infant Mortality Rates by Race, 1990-2001

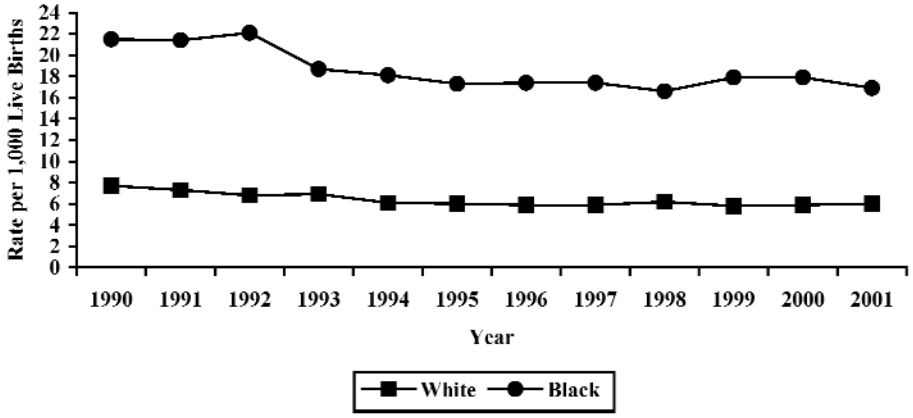


Figure 9
Michigan Infant Deaths by Manner, 2001

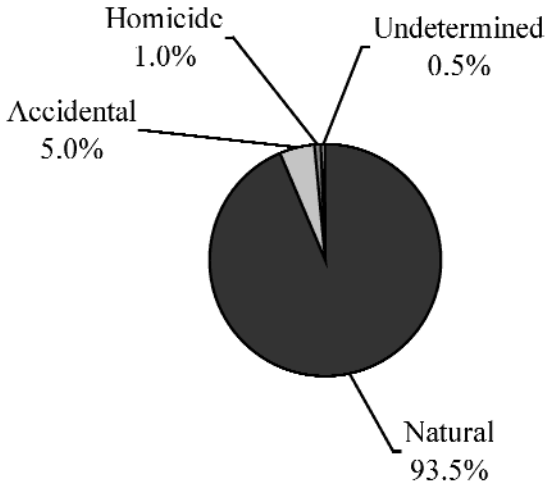
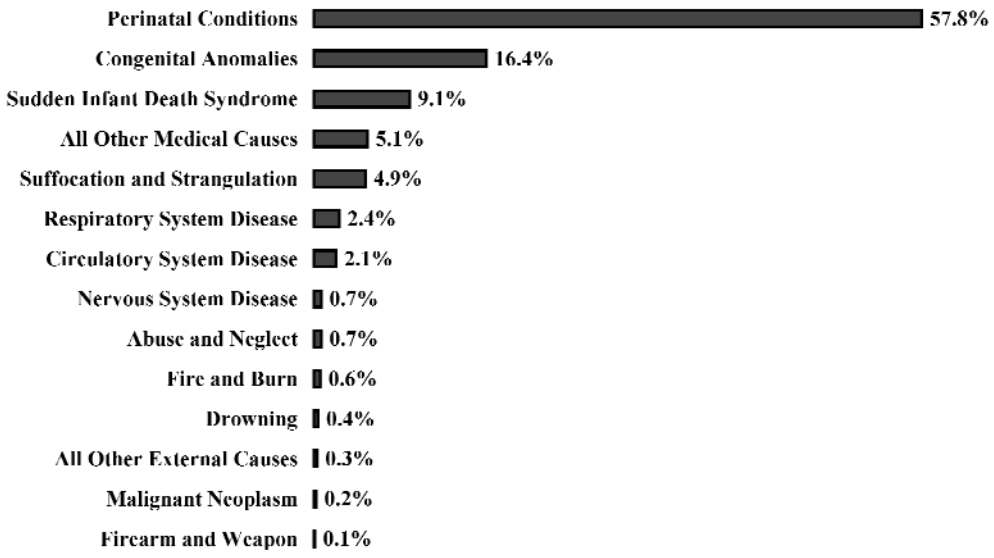


Figure 10
Leading Causes of Michigan Infant Deaths, 2001



Child Deaths, Ages 1-18

Child death rates are measured as the number of deaths per 100,000 population. They have also declined over the last decade:

Table 6
Percent Decline in Michigan Child Death Rates, Ages 1-18, 1990-2001

Age	Rate in 2001	Percent Decrease From 1990
1-4 Years	30.0	30.4
5-9 Years	14.6	34.1
10-14 Years	19.8	21.0
15-18 Years	51.0	40.8

Figure 11
Michigan Child Mortality Rates by Age, 1990-2001

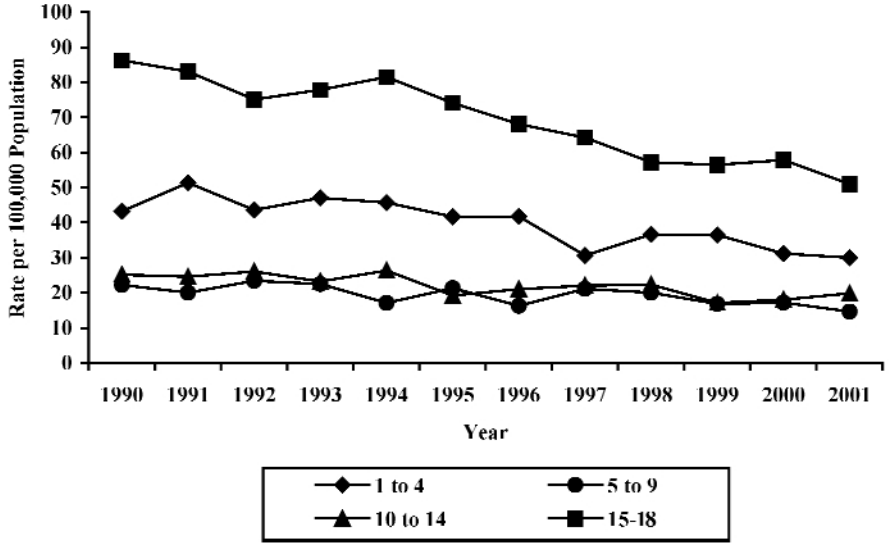


Figure 12
Michigan Child Deaths by Manner, Ages 1-4, 2001

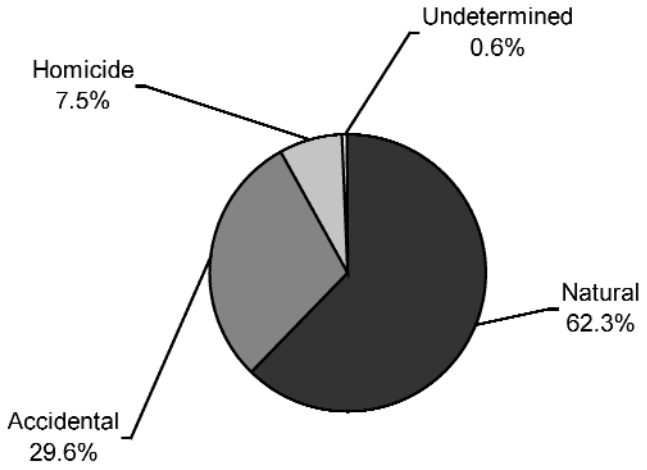


Figure 13
Leading Causes of Michigan Child Deaths, Ages 1-4, 2001

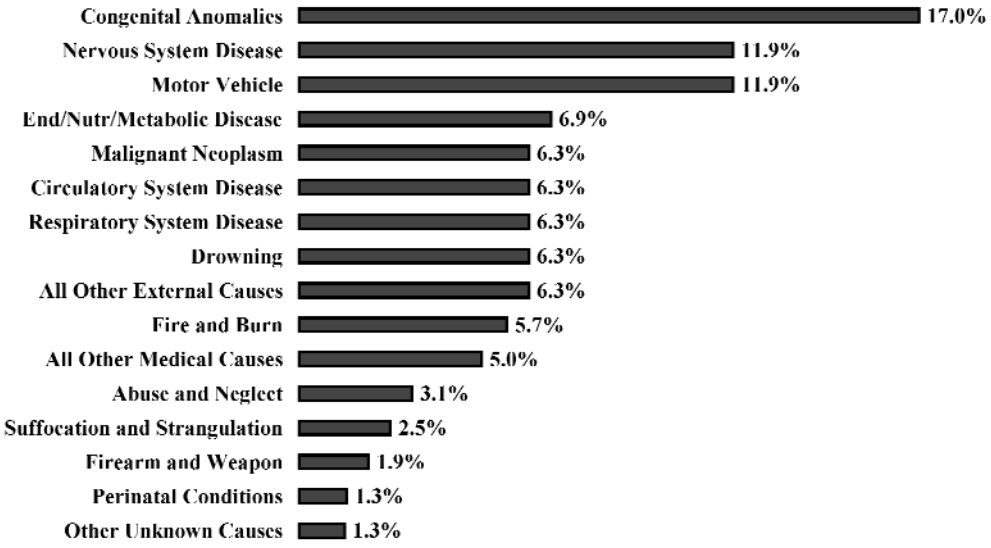


Figure 14
Michigan Child Deaths by Manner, Ages 5-9, 2001

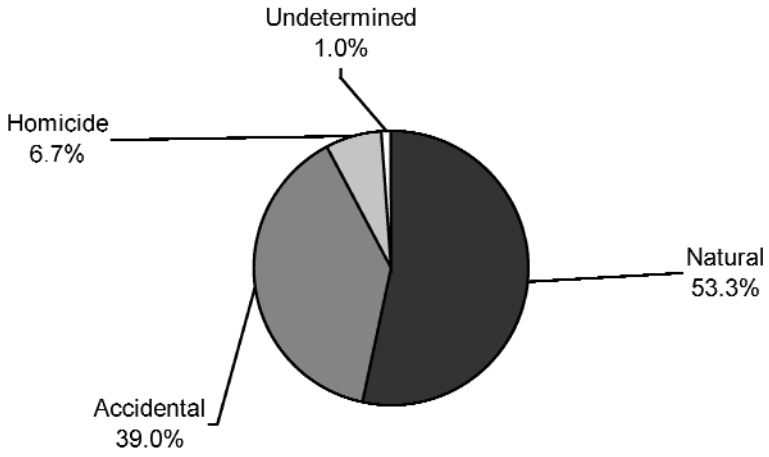


Figure 15
Leading Causes of Michigan Child Deaths, Ages 5-9, 2001

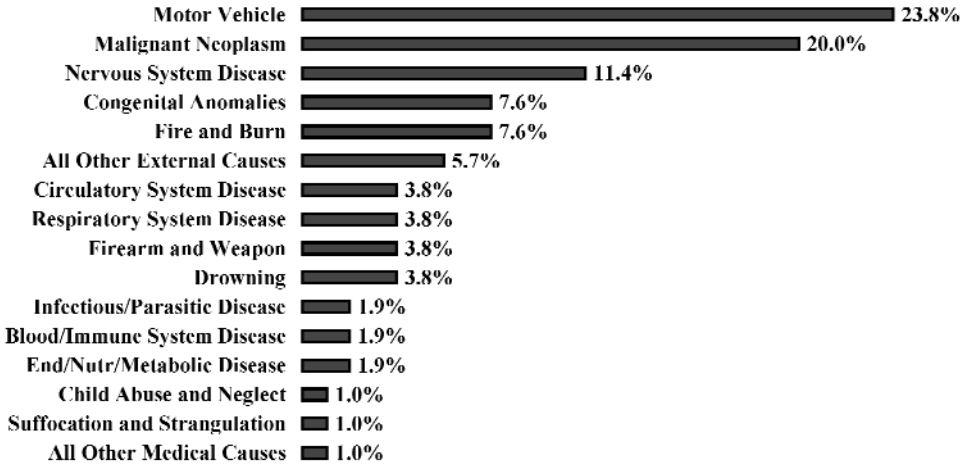


Figure 16
Michigan Child Deaths by Manner, Ages 10-14, 2001

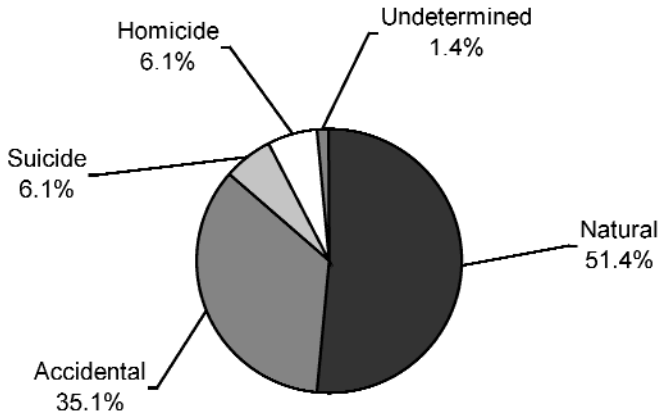


Figure 17
Leading Causes of Michigan Child Deaths, Ages 10-14, 2001

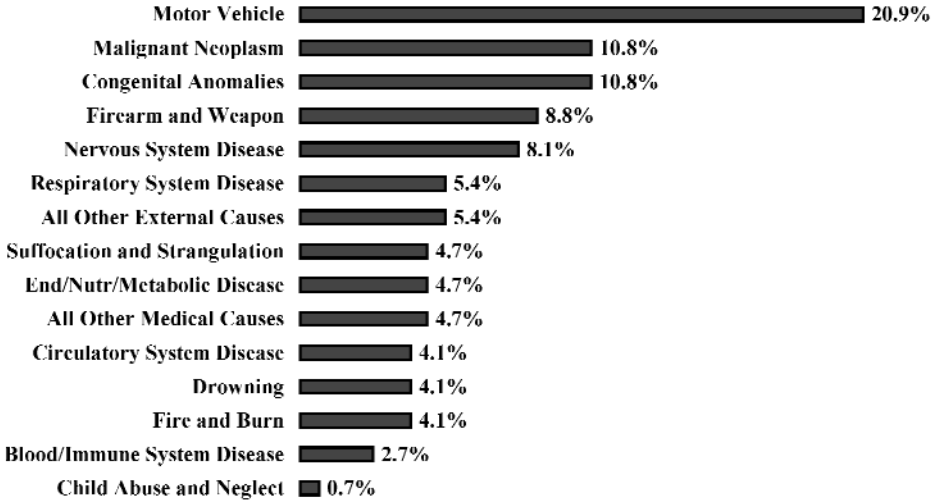


Figure 18
Michigan Child Deaths by Manner, Ages 15-18, 2001

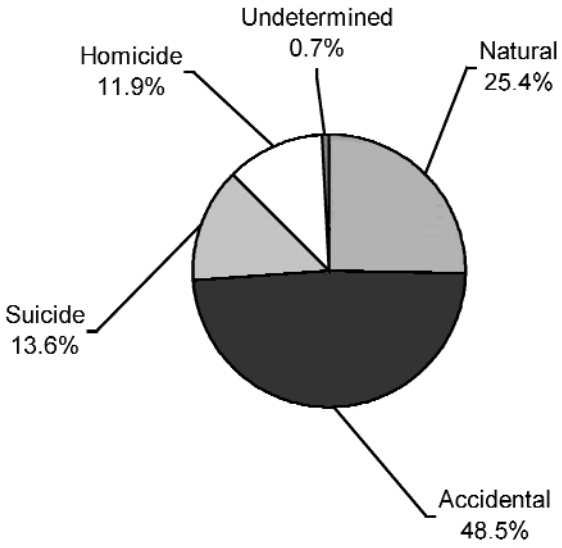
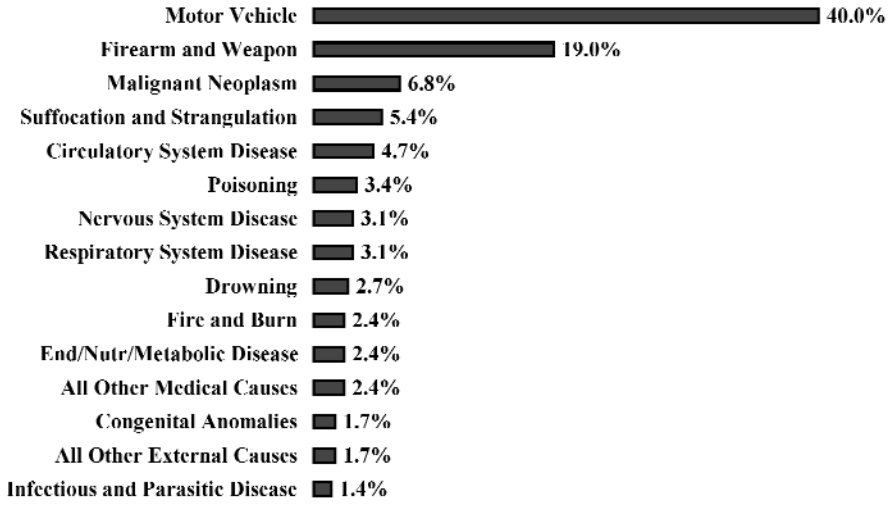


Figure 19
Leading Causes of Michigan Child Deaths, Ages 15-18, 2001



Michigan Child Death Review: A Summary of 2001 Findings From CDR Case Reports

The number of cases reviewed by teams has increased dramatically since the program began in 1995. There were 854 deaths receiving a comprehensive review in 2001, and a total of 3,072 since the inception of the program. As noted earlier, approximately 26% of reviews in 2001 were of children who died in 2000.

Since it's inception, CDR teams have reviewed a total of 3,072 cases.

Table 7
Number of Child Deaths Reviewed by Year, 1995-2001

Year of Review	Number of Cases
1995	3
1996	130
1997	200
1998	494
1999	601
2000	790
2001	854

Table 8
Number and Percent of Child Deaths Reviewed in 2001 by Year of Death

	Reviewed in 2001	
Year of Death	Number	Percent
1997	2	0.2
1998	0	0.0
1999	8	0.9
2000	218	25.5
2001	626	73.3
Total	**854**	**100.0**

Teams were able to review most of the deaths due to accidents, homicides, and suicides in 2001, but only able to review a limited number of all natural deaths.

Table 9
Number and Percent of Child Deaths Reviewed by Manner, 1995-2001

Manner of Death	Number Reviewed 2001	Number of Deaths 2001	Percent of All 2001 Deaths*
Natural	389	1287	30.2
Accidental	320	340	94.1
Homicide	63	72	89.8
Suicide	44	49	87.5
Undetermined	37	12	-
No answer	1	0	-
Total	**854**	**1760**	**-**

*This is only an approximation. As noted in the introduction, a one-to-one comparison cannot be made. There were more undetermined cases reviewed than the actual number of deaths because many of these were still pending at the end of 2001.

Table 10
Number and Percent of Child Deaths Reviewed by Manner and Cause, 2001

Manner and Cause of Death	Number	Percent
Natural	**389**	**45.5**
Natural Death < 1 Year excluding SIDS	183	21.4
Natural Death > 1 Year excluding SIDS	129	15.1
SIDS	77	9.0
Accidental	**320**	**37.5**
Motor Vehicle	178	20.8
Suffocation and Strangulation	54	6.3
Fire and Burn	37	4.3
Drowning	25	2.9
Firearm and Weapon	7	0.8
Other	19	2.2
Homicide	**63**	**7.4**
Firearm and Weapon	38	4.4
Child Abuse and Neglect	16	1.9
Other	9	1.1
Suicide	**44**	**5.2**
Firearm and Weapon	23	2.7
Suffocation and Strangulation	17	2.0
Other	4	0.5
Undetermined	**37**	**4.3**
No Answer	**1**	**0.1**
Total	**854**	**100.0**

Table 11
Number and Percent of Child Deaths Reviewed by Age, 2001

Age	Number	Percent
Under One Year	357	41.8
1-4 Years	106	12.4
5-9 Years	69	8.1
10-14 Years	101	11.8
15-18 Years	212	24.8
19-21 Years	7	0.8
Unknown	2	0.2
Total	**854**	**100.0**

Table 12
Number and Percent of Child Deaths Reviewed by Race, 2001

Race	Number	Percent
White	542	63.5
Black	267	31.3
American Indian	9	1.1
Asian	6	0.7
Multi-racial	19	2.2
Unknown	11	1.3
Total	**854**	**100.0**

Table 13
Number and Percent of Child Deaths Reviewed by Socio-economic Status (SES), 2001

SES	Number	Percent
High	9	1.1
Middle	259	30.3
Low	386	45.2
Unknown	200	23.4
Total	**854**	**100.0**

Table 14
Number of Child Deaths Reviewed by Socio-economic Status and Race, 2001

Race	Socio-economic Status				
	Low	Middle	High	No Answer	Total
White	167	219	8	148	542
Black	201	28	1	37	267
American Indian	2	4	0	3	9
Asian	1	4	0	1	6
Multi-racial	12	2	0	5	19
Unknown	3	2	0	6	11
Total	**386**	**259**	**9**	**200**	**854**

A child's socio-economic status is a general and relative estimate. It is estimated by the local teams in relation to the socio-economic conditions of the family with whom the child resided. It is representative of the family's income, housing situation, education level and general quality of life.

For all the deaths reviewed, teams identified if lack of supervision, drugs and alcohol, abuse or violence contributed to the death of the child.

Table 15
Number and Percent of Child Deaths Reviewed by Factors that Contributed to the Death, 2001

Factors	Number	Percent
Lack of Supervision	92	10.8
Alcohol	64	7.5
Drugs	48	5.6
Neglect (physical, medical and emotional)	40	4.7
Child Abuse	19	2.2
Domestic Violence	10	1.2

Teams also reported on whether there was prior CPS involvement on all deaths reviewed. There were 164 (19.2%) such cases. They reported that in 95 (57.9%) of the 164 deaths, there had been prior CPS involvement with the child. They also found that in 61 cases (35.2%), CPS had prior contact with a family member or caretaker. There was no answer given as to who CPS was involved with in 11 (6.7%) of the 164 cases.

A death is preventable if an individual or group could reasonably have done something that would have changed the circumstances leading to the death. Local teams found that 55% of all deaths reviewed in 2001 were classified as definitely or probably preventable. The percent of preventable deaths varies by cause of death. Teams found that a majority of the unintentional, homicide and suicide deaths were preventable, but only a small percentage of the natural deaths were believed to be preventable.

A death is preventable if an individual or group could reasonably have done something that would have changed the circumstances leading to the death.

Table 16
Number and Percent of Preventable Deaths Reviewed by Manner and Cause, 2001

Manner and Cause of Death	Number Reviewed	Number Preventable	Percent Preventable
Natural	**389**	**82**	**21.1**
Natural Death < 1Year, excluding SIDS	183	16	8.7
Natural Death > 1Year, excluding SIDS	129	26	20.2
SIDS	77	40	51.9
Accident	**320**	**290**	**90.6**
Motor Vehicle	178	168	94.4
Suffocation and Strangulation	54	49	90.7
Fire and Burn	37	31	83.8
Drowning	25	22	88.0
Firearm and Weapon	7	7	100.0
Other	19	13	68.4
Homicide	**63**	**51**	**81.0**
Firearm and Weapon	38	29	76.3
Child Abuse and Neglect	16	15	93.8
Other	9	7	77.8
Suicide	**44**	**27**	**61.4**
Suffocation and Strangulation	17	9	52.9
Firearm and Weapon	23	16	69.6
Other	4	2	---
Undetermined	**37**	**21**	**56.8**
No Answer	**1**	---	---
Total	**854**	**471**	**55.2**

Teams found that the percent of preventable deaths increased with the age of the child. Most deaths to teens were believed to be preventable, whereas most deaths to infants were found to be not preventable.

Table 17
Number and Percent of Preventable Deaths Reviewed by Age of Child, 2001

Age	Number Reviewed	Number Preventable	Percent Preventable
Under One Year	357	141	39.5
1-4 Years	106	57	53.8
5-9 Years	69	39	56.5
10-14 Years	101	65	64.4
15-18 Years	212	161	75.8
19-21 Years	7	6	----
Unknown	2	2	----
Total	**854**	**471**	**55.2**

In 2001, a total of 286 prevention actions were proposed and 132 of them were implemented at the time the case review report was submitted to the state.

Table 18
Number of Prevention Actions Proposed and Implemented by Teams, 2001

Action	Number Proposed	Number Implemented when Report Completed*
Educational Activities in the Media	95	51
Educational Activities in Schools	45	22
Changes in Agency Practice	32	16
Community Safety Project	28	8
Advocacy	16	9
Legislation, Law or Ordinance	11	0
New Services	8	4
Public Forums	6	1
Product Safety Action	4	3
Other Programs or Activities	41	18
Total	**286**	**132**

* Usually within one month after review.

132 prevention actions were implemented as a result of the reviews.


Keeping
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Section Three:

Natural Deaths

Overview of Natural Child Deaths, Ages 0-18

Natural Infant Deaths Excluding SIDS, Ages 0-1

Natural-Sudden Infant Death Syndrome

All Cause of Natural Deaths, Ages 1-18

Overview of Natural Child Deaths, Ages 0-18

Michigan Mortality Data from Death Certificates

In 2001, a total of 1,287 Michigan children died from natural causes.

Figure 20
Michigan Natural Child Deaths, Ages 0-18, 1990-2001

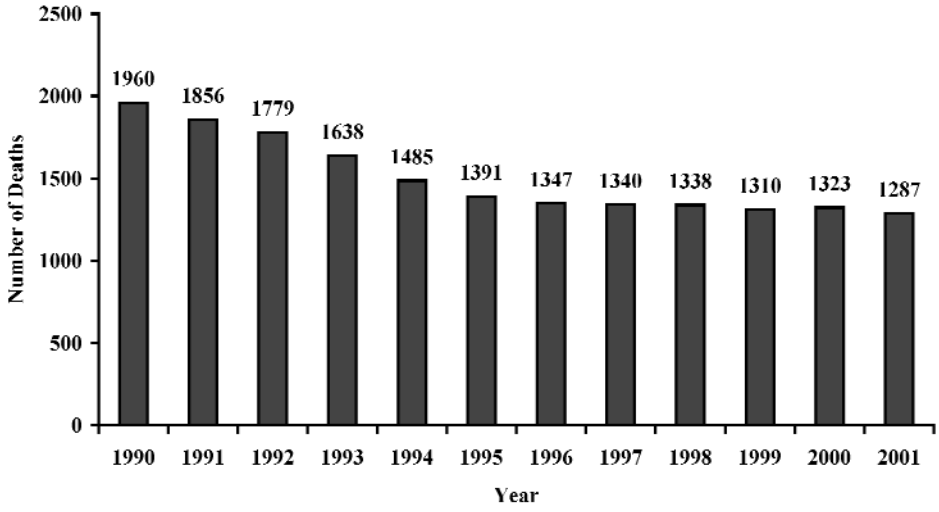


Figure 21
Michigan Natural Child Death Rates, Ages 0-18, 1990-2001

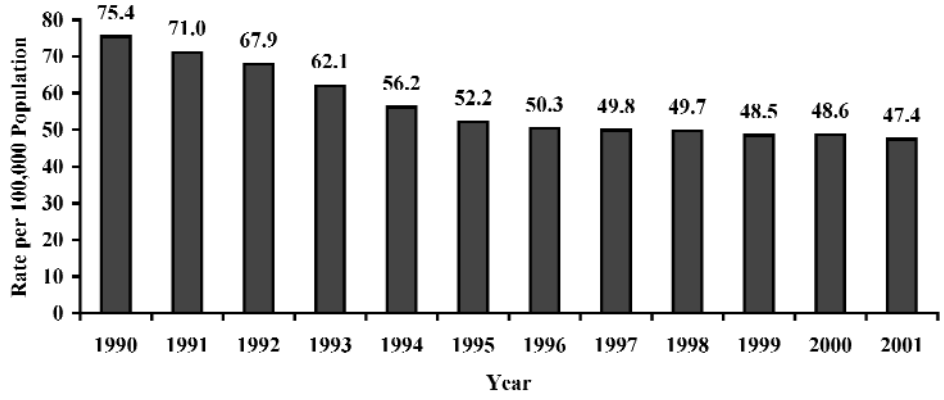


Table 19
Michigan Natural Child Deaths by Age and Sex, 2001

Age	Sex		
	Male	Female	Total
Under One Year	566	408	974
1-4 Years	51	48	99
5-9 Years	29	27	56
10-14 Years	40	36	76
15-18 Years	45	30	75
Unknown	---	---	7
Total	**731**	**549**	**1287**

Figure 22
Michigan Natural Child Death Rates by Race, Ages 0-18, 2001

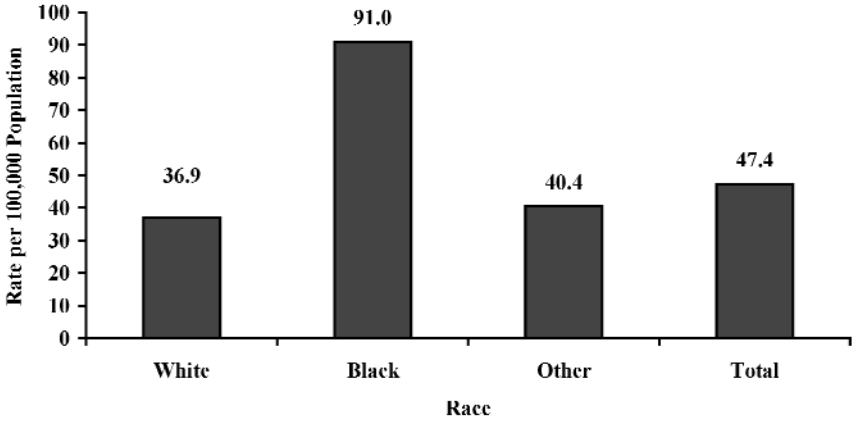


Table 20
Number and Percent Michigan Natural Child Deaths by Cause, Ages 0-18, 2001

Cause	Number	Percent
Perinatal Conditions	611	47.5
Congenital Anomalies	228	17.7
SIDS	96	7.5
Neoplasms	69	5.4
Nervous System Disease	59	4.6
Respiratory System Disease	57	4.4
Circulatory System Disease	57	4.4
All Other Causes	110	8.5

Natural Infant Deaths Excluding SIDS, Ages 0-1

Michigan Mortality Data from Death Certificates

In 2001, 883 Michigan infants died from natural causes other than SIDS.

Figure 23
Michigan Natural Infant Deaths Excluding SIDS, Ages 0-1, 1990-2001

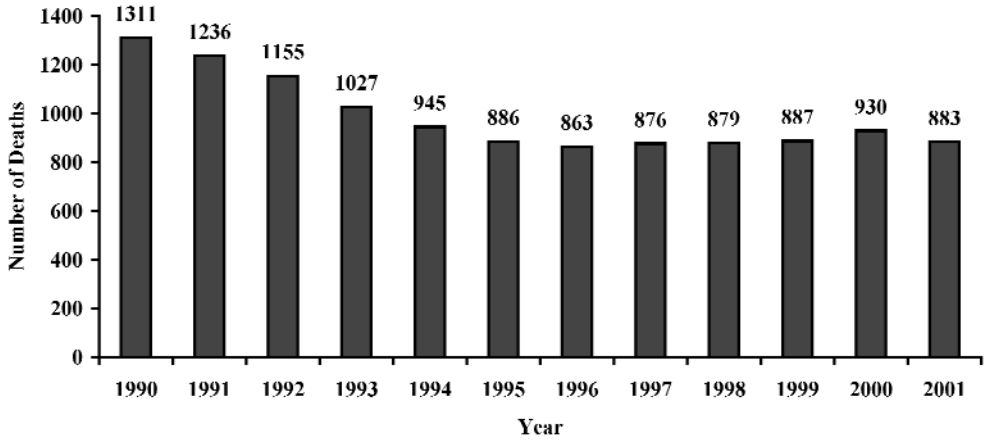


Figure 24
Michigan Natural Infant Mortality Rates Excluding SIDS, Ages 0-1, 1990-2001

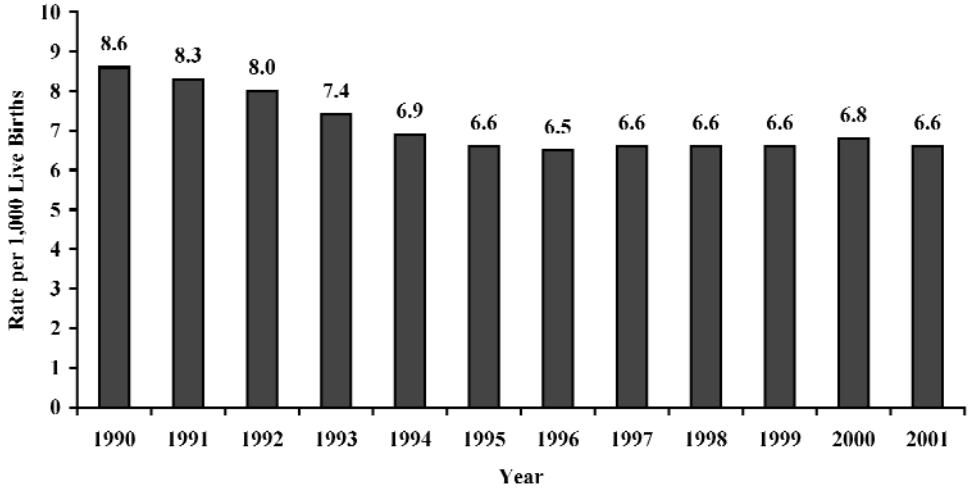


Table 21
Number and Percent of Michigan Natural Infant Deaths Excluding SIDS by Sex, Ages 0-1, 2001

Sex	Number	Percent
Male	507	57.4
Female	371	42.0
Unknown	5	0.6
Total	**883**	**100.0**

Figure 25
Michigan Natural Infant Mortality Rates Excluding SIDS by Race, Ages 0-1, 2001

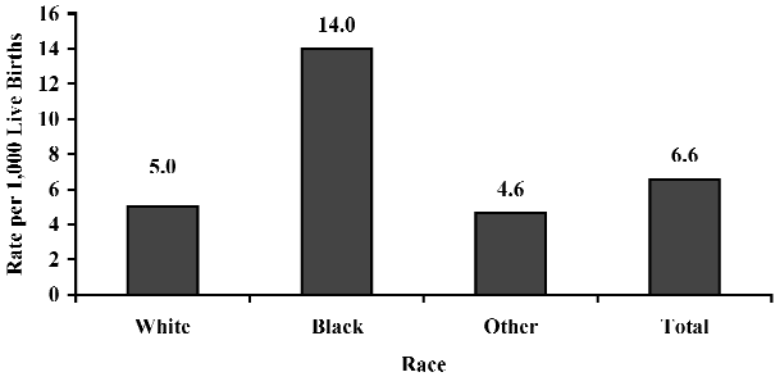


Table 22
Number and Percent Michigan Natural Child Deaths by Cause, Ages 0-1, 2001

Cause	Number	Percent
Perinatal Conditions	608	68.9
Congenital Anomalies	172	19.1
Respiratory System Disease	25	2.8
Circulatory System Disease	22	2.5
Nervous System Disease	7	0.8
Neoplasms	2	0.2

Child Death Review Team Findings from CDR Case Reports

In 2001, CDR teams reviewed 183 natural infant deaths (excluding 77 SIDS). Of these reviews, 62% were male and 37% were female (there was one case in which gender was not indicated). Approximately 71% of the infants were white and about 25% were black.

Period of gestation and birth weight are the two most important predictors of an infant's subsequent health and survival.

Period of gestation and birth weight are the two most important predictors of an infant's subsequent health and survival. Infants born too soon or too small have a much greater risk of death and both short-term and long-term disabilities than those born at term (37-41 weeks of gestation) or with birth weights of 2,500 grams or more. Teams found that 54% of all natural infant deaths other than SIDS were to babies born under 37 weeks of gestation.

Table 23
Number and Percent of Natural Infant Deaths Reviewed by Gestational Age, 2001

Gestational Age	Number	Percent
Under 24 weeks	46	25.1
24 to 31 weeks	36	19.7
32 to 37 weeks	17	9.3
Over 37 weeks	37	20.2
Unknown	47	25.7
Total	**183**	**100.0**

Low birth weight babies and very low birth weight babies are more likely to die during the first four weeks of life.

Low birth weight babies (less than 2,500 grams) and very low birth weight babies (less than 1,500 grams) are more likely to die during the first four weeks of life than babies weighing more than 2,500 grams. Teams found that 44% of all natural infant deaths other than SIDS reviewed were low birth weight, and 36.6% were very low birth weight.

Table 24
Number and Percent of Natural Infant Deaths Reviewed by Birth Weight in Grams, 2001

Birth Weight	Number	Percent
Under 750 grams	54	29.5
750 to 1499 grams	13	7.1
1500 to 2499 grams	13	7.1
Over 2500 grams	29	15.8
Unknown	74	40.4
Total	**183**	**100.0**

Of the natural infant deaths excluding SIDS reviewed, local teams found that about half of the babies died within 48 hours of birth.

Table 25
Number and Percent of Natural Infant Deaths Reviewed by Age, 2001

Age	Number	Percent
0 to 23 Hours after Birth	78	38.3
24 to 47 Hours after Birth	15	8.2
48 Hours to 5 Weeks	37	20.2
6 Weeks to 5 Months	34	18.6
6 Months to 1 Year	15	8.2
No Answer/Unknown	4	2.2
Total	**183**	**100.0**

Lack of prenatal care as well as late entry into care are significantly related to the risk of low birth weight and therefore to the risk of dying during the first four weeks of life. Of the 183 natural infant deaths excluding SIDS reviewed in 2001, 34% of the mothers entered prenatal care within their first trimester of pregnancy. Fifteen percent of the mothers entered care in their second trimester, and one percent of the mothers entered in the third trimester. In about 45% of the cases, teams did not know when the mother entered prenatal care. Mothers did not seek care in five percent of cases.

Maternal age is also related to a higher risk of low birth weight. In 12.5% of the cases reviewed, mothers were under 20 years of age.

Table 26
Number and Percent of Natural Infant Deaths Reviewed by Age of Mother, 2001

Age of Mother	Number	Percent
Under 15 Years	1	0.5
15-19 Years	22	12.0
20-24 Years	41	22.4
25-29 Years	29	15.8
30-34 Years	8	4.4
35-39 Years	7	3.8
40 Years and Over	1	0.5
Unknown	74	40.4
Total	**183**	**100.0**

In 12.5% of the cases reviewed, mothers were under 20 years of age.

Mothers' health behaviors during pregnancy including nutritional adequacy, alcohol, drug and tobacco use are associated with low birth weight and infant mortality. Proper nutrition, little or no use of alcohol, drugs or tobacco during pregnancy are keys to low infant mortality among racial/ethnic groups and immigrant communities. Cigarette smoking during pregnancy is a major risk for low birth weight, intrauterine growth retardation and infant death. Medical complications during pregnancy such as hypertension, diabetes, anemia and labor and delivery complications may also increase the risk of infant death.

Cigarette smoking during pregnancy is a major risk for low birth weight, intrauterine growth retardation and infant death.

This information was not available in many of the reviews. However, when teams had access to information, they found that in 30% of the natural infant deaths excluding SIDS there was some type of medical complication during pregnancy. Nineteen percent of the mothers reported that they smoked during pregnancy. They also found that 16% of the mothers and/or infants received some types of social support services.

Table 27
Number and Percent of Natural Infant Deaths Excluding SIDS Reviewed by Behavioral, Medical or Health and Service Use Characteristics, 2001

Characteristics	Number	Percent
Smoking during Pregnancy	34	18.6
Drug use during Pregnancy	5	2.7
Alcohol use during Pregnancy	2	1.1
Medical Complications	54	29.5
Maternal Support Services	25	13.7
Infant Support Services	9	4.9

CDR teams found that 16 (nine percent) of the natural infant death cases excluding SIDS were probably or definitely preventable.

Local Initiatives to Prevent Child Deaths

Teams proposed 16 prevention initiatives in 2001 relating to natural infant deaths, excluding SIDS. Examples of these initiatives include:

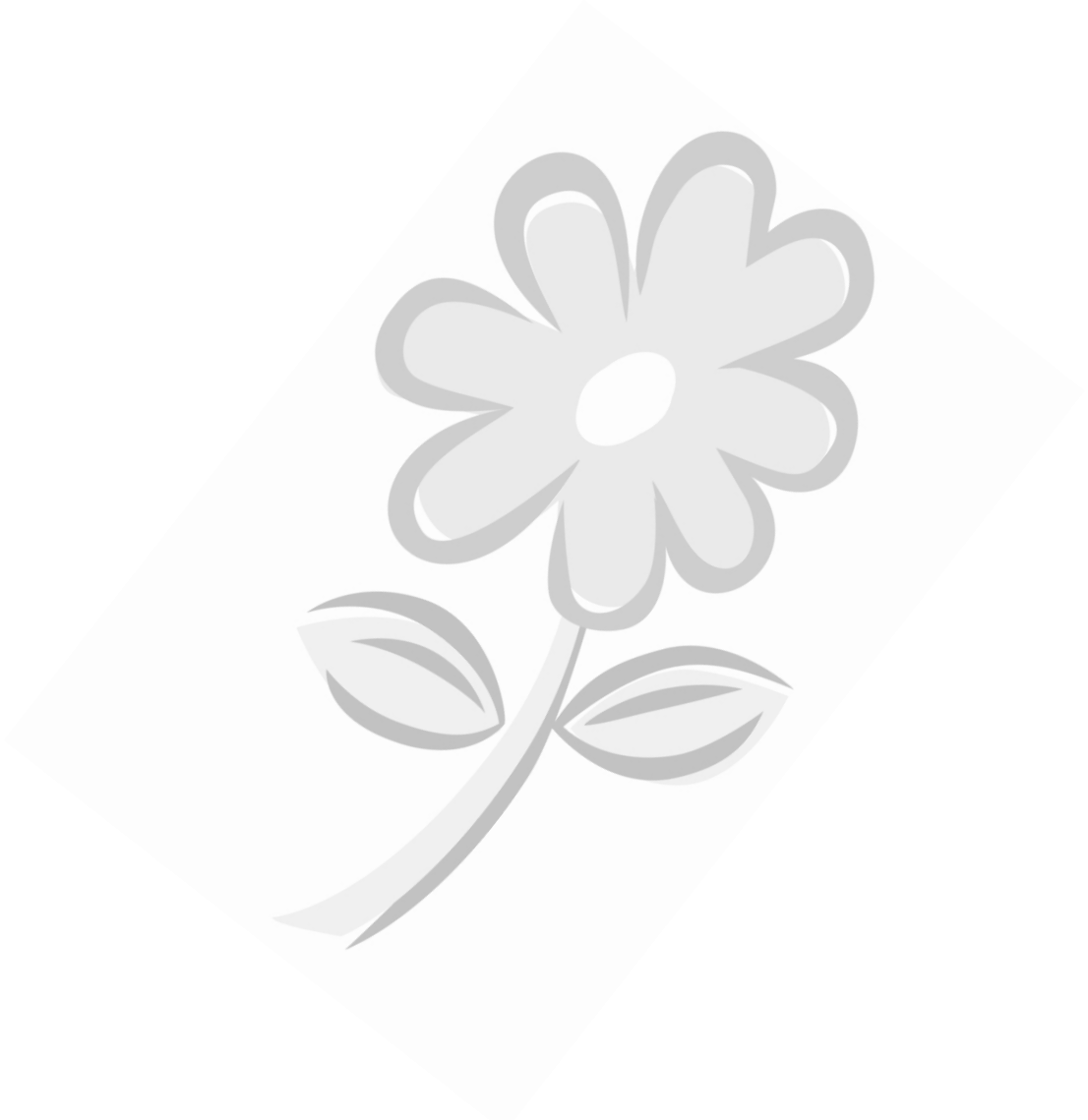
- The public needs more education via the media that highlights the importance of prenatal care and safe sleep environments for infants.
- Area hospitals should include information at discharge on the dangers of bed sharing and the "Back to Sleep" programs.
- More efforts need to be made that promote non-smoking pregnancies.
- Alternative parent education classes need to be required.
- A county now initiates follow up calls for grieving families.
- The Michigan medical examiner statute as well as protocols for filling out death certificates were discussed with emergency room doctors.
- Quicker referrals are now made to a local health department for bereavement services for families of infants that have died.
- A Fetal and Infant Mortality Review team was created in a county to conduct more in-depth reviews of infant deaths.

Recommendations for Policymakers Regarding Natural Infant Deaths, Excluding SIDS

1. The Michigan Department of Community Health should expand and continue technical and financial support to Fetal and Infant Mortality Review Programs (FIMR) in Michigan communities with high infant mortality rates and racial disparities.
2. The Michigan Department of Community Health should promote their Grief and Bereavement services to medical examiners, local public health departments and local child death review teams.
3. The Children's Action Network should lead an effort to develop a single comprehensive system of care and service that crosses agency boundaries and responsibilities and provides coordinated, culturally competent, community-based services to families with children under age five.
4. Medicaid services should be expanded to include pregnant women up to 185% of the poverty level.
5. The Michigan Surgeon General should work with medical organizations and insurance companies to ensure that their providers:
    a. Provide preconception counseling.
    b. Ensure early access to and continuity of care for all pregnant women.
    c. Comply with state laws that require physicians to offer pregnant women client-centered counseling and voluntary HIV testing.
    d. Screen all pregnant women and new parent patients for domestic violence and substance abuse and assure appropriate referral and service capacity.
    e. Increase referrals to risk reduction programs such as Maternal Support Services (MSS) and Infant Support Services (ISS).
    f. Offer or refer pregnant women and new parents to smoking cessation services.

Recommendations for Parents and Caregivers

- If you think you are pregnant, see your health care provider early and often, and follow their advice, including taking prenatal vitamins.
- If you are pregnant, do not smoke anything, drink alcohol or take any recreational drugs.
- If you experience any warning signs for pre-term labor, call your doctor or midwife right away.



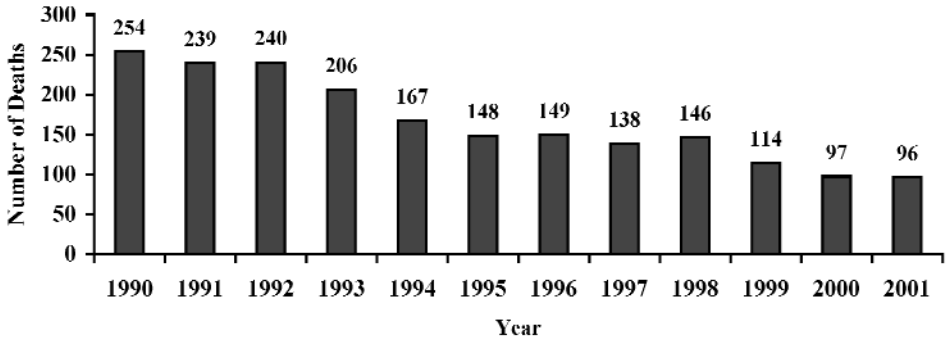
Natural - Sudden Infant Death Syndrome

Michigan Mortality Data from Death Certificates

In 2001, 96 infants died from SIDS. This was a 62% decrease from the 254 SIDS deaths in 1990. It is believed that most of this decline is due to the "Back to Sleep" campaign, which encourages parents to lay their babies on their backs during periods of sleep. This trend in declining SIDS rates is common throughout the United States. By definition, SIDS is the sudden and unexpected death of an infant under one year of age, in which a complete autopsy, scene investigation and review of medical records reveal no explanation for why the infant died.

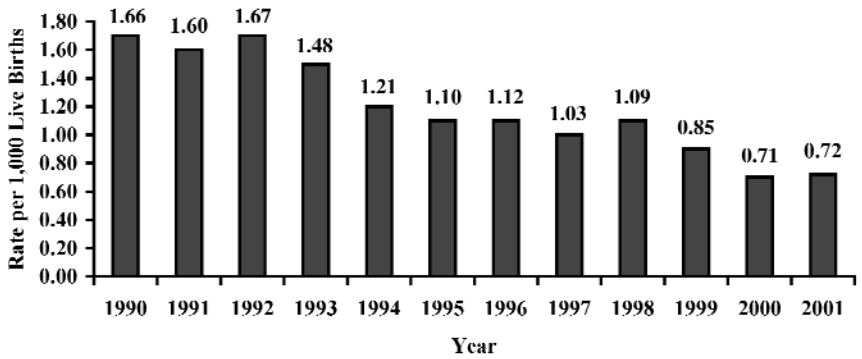
In 2001, 96 infants died from SIDS. This is a 62% decrease since 1990.

Figure 26
Michigan SIDS Deaths, 1990-2001



Infant mortality for SIDS, which is expressed in terms of the number of SIDS deaths per 1,000 live births, was 0.72 deaths in 2001.

Figure 27
Michigan SIDS Death Rates, 1990-2001

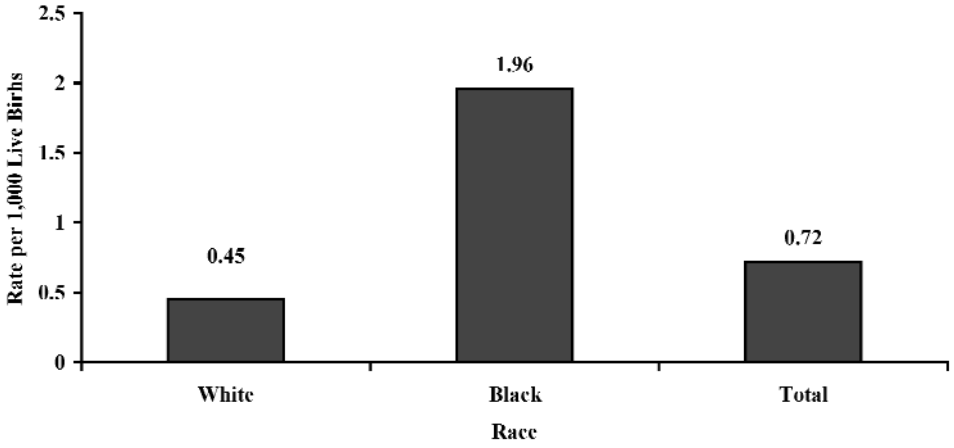


SIDS continues to disproportionately impact males and black infants.

Table 28
Number and Percent of SIDS Deaths by Sex, Ages 0-1, 2001

Sex	Number	Percent
Male	59	61.5
Female	37	38.5
Total	**96**	**100.0**

Figure 28
Michigan SIDS Rates by Race*, Ages 0-1, 2001



* A rate could not be calculated for other races because the number of cases was less than six.

Child Death Review Team Findings from CDR Case Reports

Teams reviewed 77 SIDS deaths in 2001. Sixty-five percent of the cases reviewed were males and 35% were females. Thirty-six percent were white infants, 56% were black, three percent were American Indian and five percent were multi-racial. Teams found that most SIDS infants were between the ages of two and four months (49.4%).

Table 29
Number and Percent of SIDS Deaths
Reviewed by Age, 2001

Age	Number	Percent
Under 2 Months	22	28.6
2 to Under 4 Months	38	49.4
4 to Under 6 Months	8	10.4
6 to Under 8 Months	6	7.8
8 to Under 12 Months	3	3.9
Total	**77**	**100.0**

All of the 77 cases were designated as medical examiner cases. Autopsies were completed in all of them. In 2001, scene investigations were done by law enforcement in 60 of the cases. Medical examiners conducted scene investigations in 19 of the cases. Five of the cases were not investigated by either law enforcement or the medical examiner. The infant's medical history was not reviewed prior to the SIDS determination in about 56% of the cases.

Although SIDS is not considered preventable, there are now a number of known risk factors. Babies living with these risk factors are more likely to die of SIDS than babies not exposed to these risks. They include unsafe sleep environments, exposure to prenatal and second-hand smoking and overheating. Improvements in scene investigations of SIDS deaths have provided local review teams with information on exposure to these risks. It should be noted that many of the risk factors present in these SIDS deaths bear similarities to the accidental infant suffocation deaths, as well as the majority of the deaths of undetermined manner.

Research has shown that the safest place for a baby to sleep is in a crib.

Sleep Environment

While research has shown that the safest place for a baby to sleep is in a crib, only 12 of the 77 infants were sleeping in a crib when found. Twenty-nine of the infants died while sleeping in adult beds.

Table 30
Number and Percent of SIDS Cases Reviewed by Infant Sleeping Location, 2001

Sleeping Location	Number	Percent
Other Bed	29	37.7
Couch	13	16.9
Crib	12	15.5
Floor	2	2.6
Other*	15	19.5
No answer/missing	6	7.8
Total	**77**	**100.0**

*Other sleeping locations include bassinets, car seats and waterbeds.

Back sleeping is known to reduce the risk of SIDS. However, teams found that only 30% of the babies were sleeping on their backs when found, and most babies were sleeping on their stomachs.

Table 31
Number and Percent of SIDS Cases Reviewed by Sleeping Position at Time of Death, 2001

Sleeping Location	Number	Percent
Stomach	35	45.5
Back	23	29.9
Side	3	3.9
No Answer	16	20.8
Total	**77**	**100.0**

Fifty-two percent of the SIDS babies were sharing a sleep surface with other children or adults.

New data suggests that infants sleeping in a bed with others increases risk for SIDS. Fifty-two percent of the SIDS babies were sharing a sleep surface with other children or adults.

Only 35% of the SIDS babies were sleeping on a firm surface. Thirty-three percent of the infants were sleeping in or on heavy bedding and pillows.

Only two of the 77 babies who died of SIDS were sleeping in cribs, by themselves and on their backs.

Other Risk Factors Present

Fifty-seven percent of the infants were exposed to either prenatal or second-hand cigarette smoke. Overheating of the babies through blanket use or high room temperature was a factor in 16% of the cases. Other risk factors in several deaths included caregiver alcohol and substance use and overuse of cold medicines.

CDR teams found that 40 of the cases designated as SIDS deaths (52%) were probably or definitely preventable. The teams believed that 19 of the deaths (25%) were not preventable and in 18 cases (23%), the team was unsure or did not give an answer.

Local Initiatives to Prevent Child Deaths

The local teams proposed a total of 36 SIDS risk reduction initiatives. Examples of these initiatives include:

- Two counties identified a need for a "Back to Sleep" and a safe sleep campaign.
- One community is working to develop a crib distribution program.
- One county would like to provide education to parents and grandparents on safe sleep environments for infants. At hospital discharge, a statement verifying that they understand safe sleep could be signed.
- Train first responders and the Family Independence Agency workers on safe sleeping environments for infants so they can help educate parents and caregivers.
- A team had a safe sleep display in a local mall.
- A school system started educating students on safe sleep environments for infants.
- Local media has published information on infant safe sleep environments.
- EMS now notifies law enforcement of all sudden and unexpected infant deaths.
- One county increased the number of educational activities with Healthy Start participants regarding smoking cessation and infant sleep position.
- A medical examiner was given information about autopsy reimbursements available from the Michigan Department of Community Health.

Recommendations for Policymakers Regarding Sudden Infant Death Syndrome

(Note: some of these recommendations are the same as those in the accidental suffocation and undetermined manner sections.)

1. In every county, the prosecuting attorney, law enforcement agencies, medical examiner and the Family Independence Agency should jointly adopt and implement a child death scene investigation protocol using the *State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths* as a model.
2. The Michigan Department of Community Health and the Family Independence Agency should collaborate to implement a statewide campaign that promotes safe infant sleep environments and explicitly describes the dangers posed to infants in bed-sharing and other unsafe sleep environments.
3. The Michigan Department of Health should strengthen the prenatal smoking cessation program, especially as it relates to Sudden Infant Death Syndrome.

Recommendations for Parents and Caregivers

- Always keep your baby in a smoke-free environment.
- Practice the recommendations from the Consumer Product Safety Commission (CPSC) for safe infant sleep environments.
    - Place your baby on his/her back on a firm, tight-fitting mattress in a crib that meets current safety standards.
    - Remove pillows, quilts, comforters, sheepskins, stuffed toys and other soft products from the crib.
    - Use a sleeper or other sleep clothing as an alternative to blankets, with no other covering.
    - If using a blanket, put your baby with feet at the foot of the crib. Tuck a thin blanket around the crib mattress, reaching only as far as your baby's chest.
    - Make sure your baby's head remains uncovered during sleep.
    - Do not place your baby on a waterbed, sofa, soft mattress, pillow or other soft surface to sleep.
    - Do not sleep in the same bed with your baby.

All Causes of Natural Child Deaths, Ages 1-18

Michigan Mortality Data from Death Certificates

In 2001, 306 Michigan children over the age of one died of natural causes. There were two additional natural child deaths whose ages were not listed.

Figure 29
Michigan Natural Child Deaths, Ages 1-18, 1990-2001

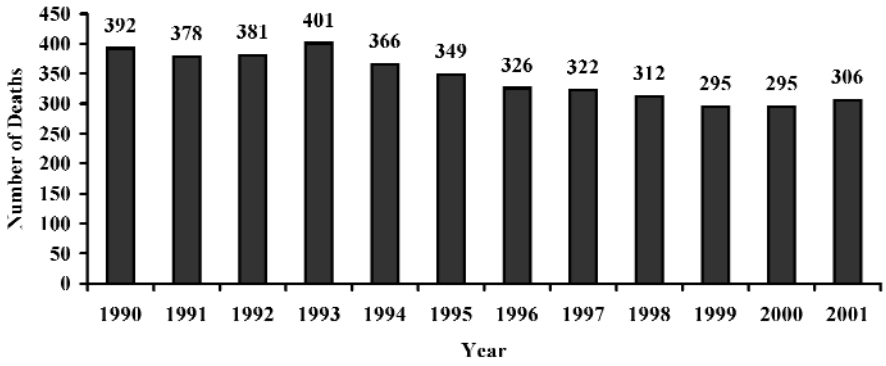


Figure 30
Michigan Natural Child Death Rates, Ages 1-18, 1990-2001

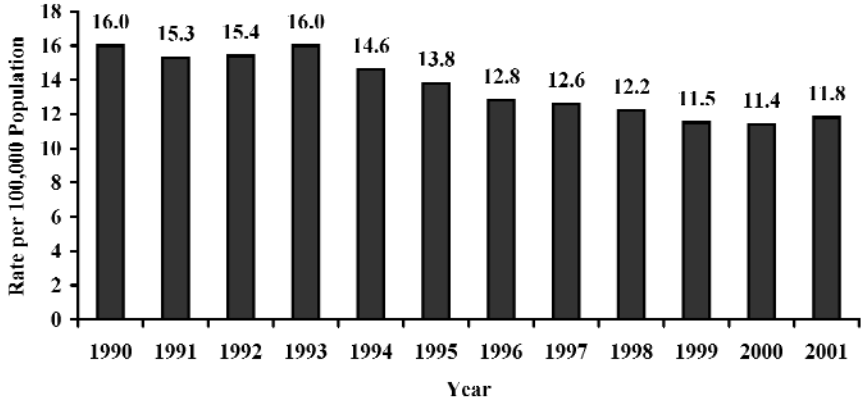


Table 32
Number of Michigan Natural Child Deaths by Age and Sex, Ages 1-18, 2001

Age	Sex		Total
	Male	Female	
1-4 Years	51	48	99
5-9 Years	29	27	56
10-14 Years	40	36	76
15-18 Years	45	30	75
Total	**165**	**141**	**306**

Figure 31
Michigan Natural Child Death Rate by Race, Ages 1-18, 2001

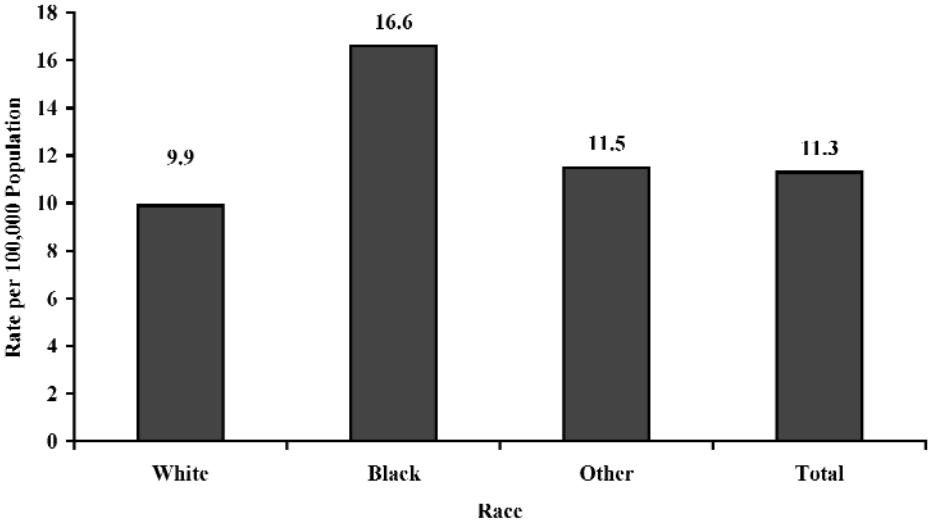
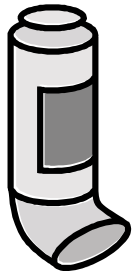


Table 33
Number and Percent of Michigan Natural Child Deaths by Cause, Ages 1-18, 2001

Cause	Number	Percent
Neoplasm	67	21.9
Congenital Anomalies	56	18.3
Nervous System Disease	52	17.0
Circulatory System Disease	34	11.1
Respiratory System Disease	31	10.1
Perinatal Conditions	3	1.0
All Other Causes	63	20.6
Total	**306**	**100.0**



Child Death Review Team Findings from CDR Case Reports

CDR teams reviewed 129 natural deaths of children over age one in 2001. About 32% of the natural deaths reviewed were of children between ages one and four. Of the natural deaths to children ages 1-18, about 63% were male and 37% were female. Approximately 64% of the children were white and 30% were black.

Table 34
Number and Percent of Natural Child Deaths Reviewed by Age, 2001

Age	Number	Percent
1-4 Years	41	31.8
5-9 Years	26	20.2
10-14 Years	31	24.0
15-18 Years	30	23.3
Unknown	1	0.8
Total	**129**	**100.0**

Of the 129 deaths reviewed, about 17% were due to respiratory and asthma illnesses. Some asthma deaths occurred to children who were not using medication correctly or did not have it available at the time of the episode. Even though the cause of these deaths are natural, they are largely preventable with consistent medical treatment. In 2001, there were seven asthma fatalities reviewed by CDR teams. Five of these children lived in Wayne County and all but one was black.

Table 35
Number and Percent of Natural Child Deaths Reviewed by Cause, Ages 1-18, 2001

Cause	Number	Percent
Respiratory/Asthma	22	17.1
Cardiac	20	15.5
Congenital Illness	17	13.2
Cancer/Neoplasm	17	13.2
Cerebral	14	10.9
Infectious Illness	9	7.0
Other	45	34.9
Total	**144***	**---**

*The total number of cases is greater than 129 because some children died of multiple causes.

Many of these underlying causes of child deaths are not believed to be preventable in the same way in which accidents, homicides or suicides are preventable. However, illnesses including asthma and some infectious diseases can and should be prevented. The local teams found that 20% of natural deaths to children over age one are preventable.

Local Initiatives to Prevent Child Deaths

The local teams proposed a total of 15 prevention initiatives related to natural deaths to children over one. Examples of these initiatives include:

- One team worked with the state asthma coalition to better understand the risk factors involved with this illness and to improve the overall health of children.
- One community focused on encouraging parents to immunize their children for diseases/illnesses that are not currently required.
- When a child dies in one community, 911 Central Dispatch notifies Children's Protective Services.
- Tuberculosis screening is now offered in one high school.
- An intermediate school district was contacted and helped to develop a policy which requires all schools to call 911 immediately if a student loses consciousness.

Recommendation for Policymakers Regarding Natural Deaths to Children over Age One

1. The Michigan Department of Community Health and the Family Independence Agency should support a partnership and the sharing of information between the Michigan Child Death Review Program and the Michigan Asthma Coalition to improve the diagnosis, treatment and prevention of childhood asthma.

Recommendations for Parents and Caregivers

- Ensure that your children receive regular preventive medical care.
- Promptly seek medical care when you think your children need to see a doctor and make sure your children follow their treatment plans.

Section Four:

Accidents (Unintentional Injuries)

Overview of Accidental Child Deaths, Ages 0-18

Michigan Mortality Data from Death Certificates

In 2001, a total of 340 Michigan children died due to accidental injuries.

Figure 32
Michigan Accidental Child Deaths, Ages 0-18, 1990-2001

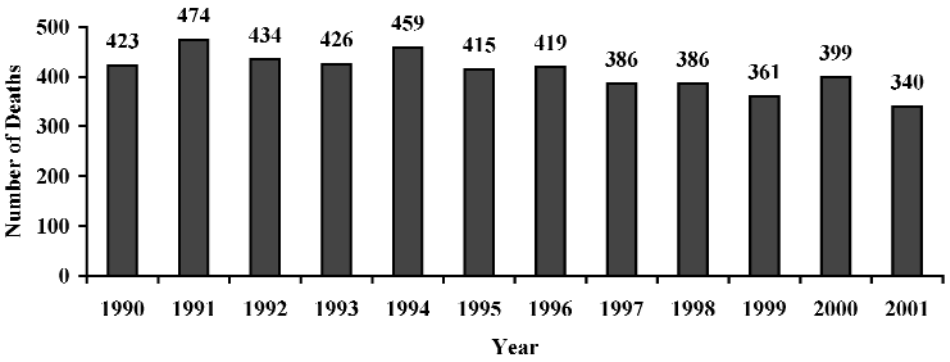


Figure 33
Michigan Accidental Child Death Rates, Ages 0-18, 1990-2001

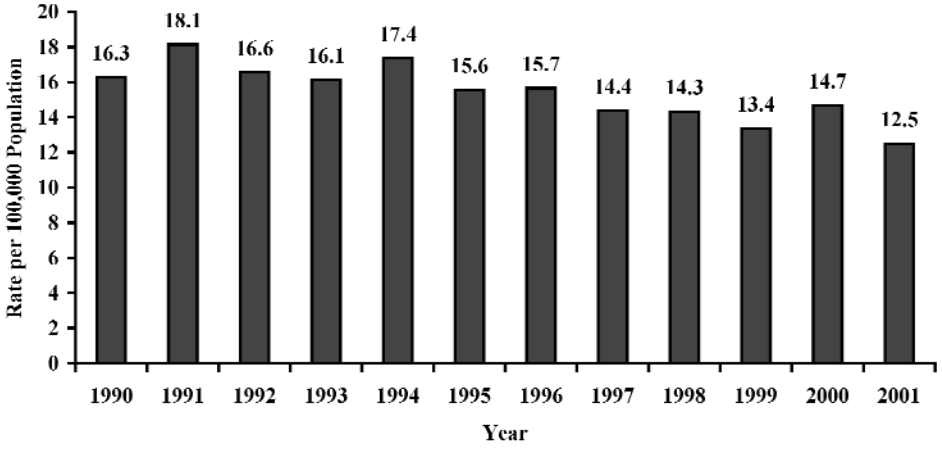
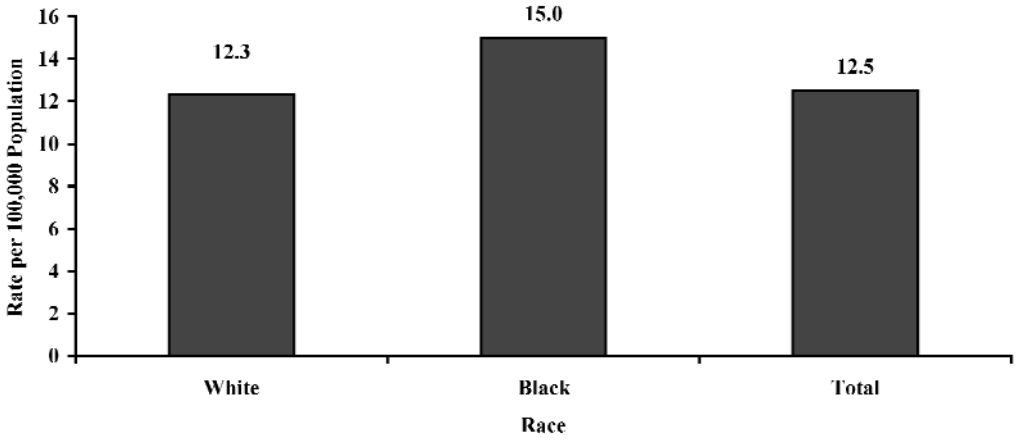


Table 36
Number of Michigan Accidental Child Deaths by Age and Sex, 2001

Age	Sex		
	Male	Female	Total
Under One Year	34	23	57
1-4 Years	31	16	47
5-9 Years	27	14	41
10-14 Years	29	23	52
15-18 Years	101	42	143
Total	**222**	**118**	**340**

Figure 34
Michigan Accidental Child Death Rates by Race*, Ages 0-18, 2001



* A rate could not be calculated for other races because the number of cases was less than six.

Table 37
Number and Percent Michigan Accidental Child Deaths by Cause, Ages 0-18, 2001

Cause	Number	Percent
Motor Vehicle	193	56.8
Suffocation and Strangulation	53	15.6
Fire and Burn	33	9.7
Drowning	30	8.8
Poisoning	8	2.4
Firearm and Weapon	4	1.2
All Other Causes	19	5.6
Total	**340**	**100.0**

Accidental - Motor Vehicle

Michigan Mortality Data from Death Certificates

In 2001, 193 Michigan children died in accidental motor vehicle crashes.

Figure 35
Michigan Accidental Child Deaths Due to Motor Vehicle, Ages 0-18, 1990-2001

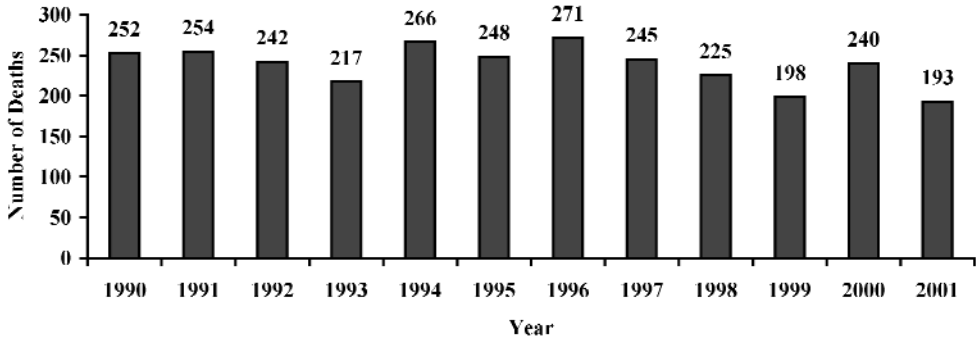


Figure 36
Michigan Accidental Child Death Rates Due to Motor Vehicle, Ages 0-18, 1990-2001

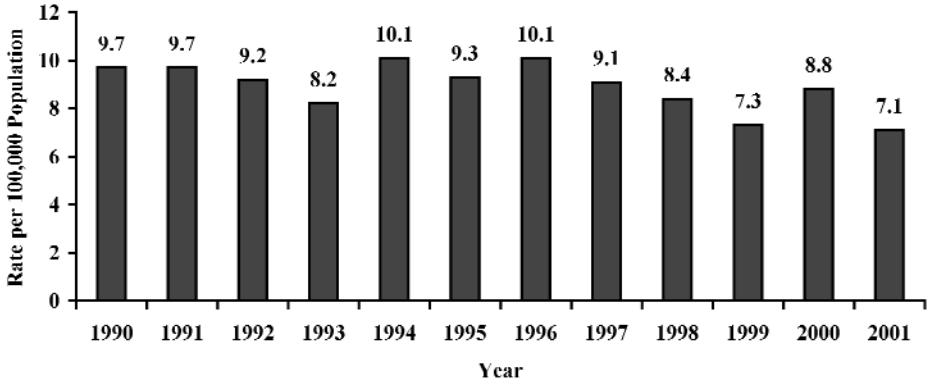
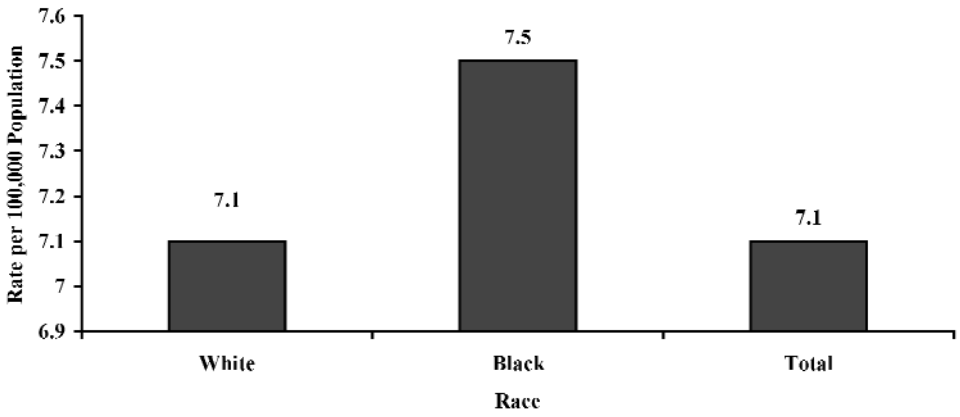


Table 38
Number of Michigan Accidental Child Deaths Due to Motor Vehicle by Age and Sex, 2001

Age	Sex		
	Male	Female	Total
Under One Year	0	0	0
1-4 Years	11	8	19
5-9 Years	16	9	25
10-14 Years	15	16	31
15-18 Years	79	39	118
Total	**121**	**72**	**193**

Figure 37
Michigan Accidental Child Death Rates Due to Motor Vehicle by Race*, Ages 0-18, 2001



* A rate could not be calculated for other races because the number of cases was less than six.

Table 39
Number and Percent of Michigan Accidental Child Deaths Due to Motor Vehicle by Position of Child, 2001

Position of Child	Number	Percent
Occupant	76	39.4
Pedestrian	32	16.6
Bicyclist	8	4.1
Motorcyclist	5	2.6
Other	2	1.0
Unspecified	70	36.3
Total	**193**	**100.0**

Child Death Review Team Findings from CDR Case Reports

Motor vehicle crashes are the leading cause of accidental injury deaths to children in Michigan. Teams reviewed a total of 178 motor vehicle deaths in 2001, including 109 deaths to boys and 68 deaths to girls. One case was of unknown gender. Adolescent males were most likely to die in motor vehicle crashes (36%). Seventy-eight percent of these deaths were to white children and 16% were black. Adolescents were the largest age group represented with 56% to children ages 15-18.

Adolescent males were most likely to die in motor vehicle crashes.

Table 40
Number of Accidental Motor Vehicle Deaths Reviewed by Age and Sex, 2001

Age	Sex		
	Male	Female	Total
Under One Year	2	2	4
1-4 Years	12	8	20
5-9 Years	13	7	20
10-14 Years	14	14	28
15-18 Years	64	35	99
Over 18 Years	3	1	4
Unknown	—	—	3
Total	**108**	**67**	**178**

Younger drivers were found more likely to cause a fatal crash. In the 76 fatal crashes where the driver at fault was under 18 years of age, teams found that 57% had one or more teen passengers.

Published studies support that the risk of teen motor vehicle deaths increase significantly as the number of teen passengers in the car increases. Younger drivers are more likely to be distracted, take risks and drive erratically when their peers are present. This was found to be true in 23% of the cases.

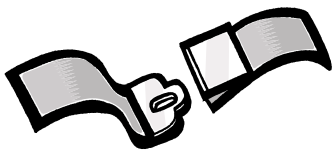


Table 41
Age of Driver at Fault by Number of Teen Passengers in the Car for Accidental Motor Vehicle Deaths Reviewed, 2001

Age of Driver at Fault	Number of Teen Passengers in the Car			Total
	One	Two	Three +	
Under 16 Years	2	0	0	2
16-18 Years	12	10	19	41
19-21 Years	5	0	4	9
Over 22 Years	6	2	2	10
Unknown	—	—	—	116
Total	**27**	**12**	**26**	**178**

Nearly half of all motor vehicle deaths reviewed were to child passengers in cars.

The location of the child at the time of death is also noteworthy. Nearly half of all motor vehicle deaths reviewed were to child passengers in cars at the time of crash. About 26% of deaths reviewed were to children who were drivers. Fifteen percent of cases reviewed were pedestrians. Two children were struck by trains while crossing railroad tracks.

Table 42
Number and Percent of Accidental Motor Vehicle Deaths Reviewed by Position of Child, 2001

Position of Child	Number	Percent
Passenger	88	49.4
Driver	46	25.8
Pedestrian	27	15.2
Bicyclist	7	3.9
Other	8	4.5
No answer	2	1.1
Total	**178**	**100.0**

Most of the crashes occurred between 6:00 a.m. and 6:00 p.m. (46%). Driver error, speeding and reckless driving were most often the primary cause of the crash in the cases reviewed (43%, 20%, and 13% respectively).

Table 43
Number and Percent of Accidental Motor Vehicle Deaths Reviewed by Primary Cause of Crash, 2001

Primary Cause of Crash	Number*	Percent
Driver Error	98	43.4
Speeding	46	20.4
Recklessness	30	13.3
Poor Weather	11	4.9
Child Pedestrian Error	10	4.4
Alcohol/Drug Influence	10	4.4
Other	19	8.4
No Answer/Unknown	2	0.9
Total	**226**	**100.0**

*The total number of primary causes exceeds the number of motor vehicle child deaths, as the death may have resulted from multiple causes.

In only 4.4% of the cases reviewed was alcohol or drugs a factor in the crash.

Adolescent males were most likely to be the driver at fault in the cases reviewed, and were more likely to have speeding noted as the primary cause of the crash. In only 4.4% of the cases reviewed was alcohol or drugs a factor in the crash.

Road conditions were reported as normal in 62% of the crashes reviewed; wet, icy or snowy in about 18%; and loose gravel roads were a factor in six percent. Gravel roads appeared to be an issue for inexperienced drivers traveling at high speeds in rural counties.

Table 44
Number and Percent of Accidental Motor Vehicle Deaths Reviewed by Road Condition, 2001

Condition of Road	Number	Percent
Normal	110	61.8
Wet	18	10.1
Ice or Snow	14	7.9
Loose Gravel	11	6.2
Other	5	2.8
No Answer/NA	20	11.2
Total	**178**	**100.0**

In only about 32% of the cases was a restraint known to have been used correctly. In almost 26% of the motor vehicle crashes reviewed, a restraint was present but not used. Females were more likely than males to have been properly restrained at the time of the crash (37% vs 28%).

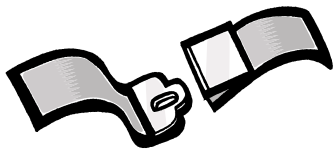


Table 45
Number of Accidental Motor Vehicle Deaths Reviewed by Restraint Use and Age, 2001

Age	Restraint Use						
	No Answer	Present, Not Used	None in Vehicle	Used Correctly	Used Incorrectly	Not Needed*	Total
Under One Year	0	0	0	3	0	1	4
1-4 Years	4	1	2	6	1	6	20
5-9 Years	0	7	0	4	1	8	20
10-14 Years	1	5	0	7	0	15	28
15-19 Years	15	32	0	33	1	19	100
Unknown	0	2	0	3	0	1	4
Total	**20**	**47**	**2**	**56**	**3**	**50**	**178**

* Not applicable, as with child pedestrians or bicyclists.

Local teams found that about 94% of the motor vehicle deaths reviewed were preventable.

Local Initiatives to Prevent Child Deaths

In 2001, the local teams proposed a total of 64 motor vehicle prevention initiatives. The teams took action in implementing 30 of these initiatives. Examples of prevention initiatives include:

- One county wrote a letter to county road commission regarding a cable barrier at the road.
- Increased promotion of anti-drug/alcohol usage.
- Increased community education on drinking and driving.
- One county planned an educational update for area driver's education instructors to increase awareness of local deaths related to teen drivers, gravel roads, dangerous intersections and objects on dash/rearview mirror obstructing view.
- Continued education in schools:
    - o Assemblies, flyers, and posters
    - o Campaign to raise awareness of dangers to teens of drinking & driving. Liabilities of parents who host parties and serve alcohol to minors – prom, graduations, holiday and homecoming games/dances.
    - o Letters to graduating kids on drinking & driving
    - o Anti drug campaign
    - o Articles in the paper
    - o Continued education on underage drinking and driving
    - o Drivers education
    - o Ongoing safety messages
- Published newspaper articles on safety.

- Increased patrols and enforcement in area where crash occurred.
- Sent letters to townships to build bike paths.
- Suggested that a letter be sent to the road commission asking for a review of the intersection, number of accidents and possible interventions to decrease the number of crashes.

Recommendations for Policymakers Regarding Motor Vehicle Crashes

1. The Michigan Legislature should amend the current graduated licensing law to place limits on the number of teen passengers allowed in vehicles driven by teens with Level Two Intermediate Licenses. This limitation should apply at all times of the day.
2. The Michigan Department of Education should partner with the Office of Highway Safety Planning and the Michigan Department of Community Health to conduct a comprehensive review of driver education programs throughout the state to ensure that the curricula adequately addresses all high risk driving situations.
3. The Michigan Legislature should amend the Michigan Child Passenger law to:
    a. Require the use of a belt positioner for booster seats to protect children over age four and up to age eight and 80 pounds.
    b. Increase fines and points for those not following the law.
    c. Increase public awareness and education programs.
4. The Michigan Department of Community Health should enhance resources to encourage health care providers to provide anticipatory guidance to expectant and new parents on the proper installation and usage of child safety seats and booster seats.

Recommendations for Parents and Caregivers

- Put limits on the number of teen passengers allowed in a car with your teen.
- Ensure that you use the correct car seat for your child's age and weight. Children ages four to eight should be in booster seats.

Accidental - Suffocation and Strangulation

Michigan Mortality Data from Death Certificates

In 2001, 53 Michigan children died of accidental suffocation and strangulation.

Figure 38
Michigan Accidental Child Deaths Due to Suffocation and Strangulation, Ages 0-18, 1990-2001

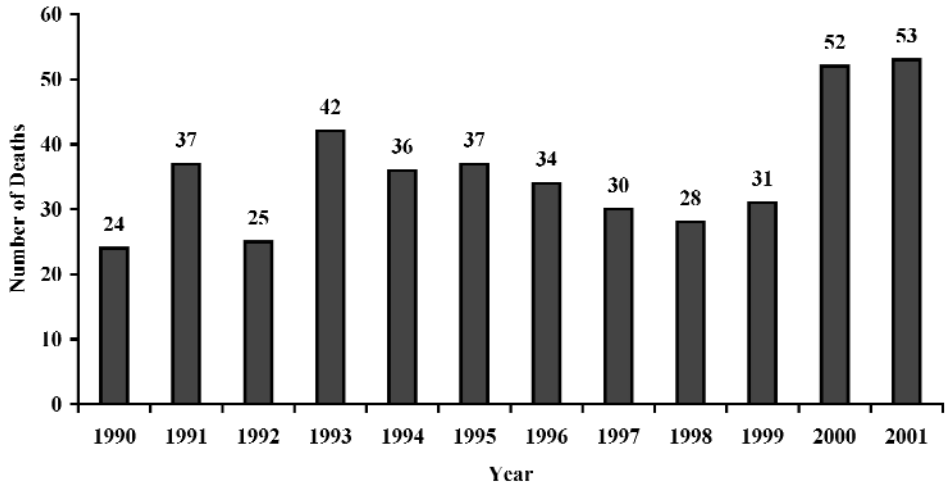


Figure 39
Michigan Accidental Child Death Rates Due to Suffocation and Strangulation, Ages 0-18, 1990-2001

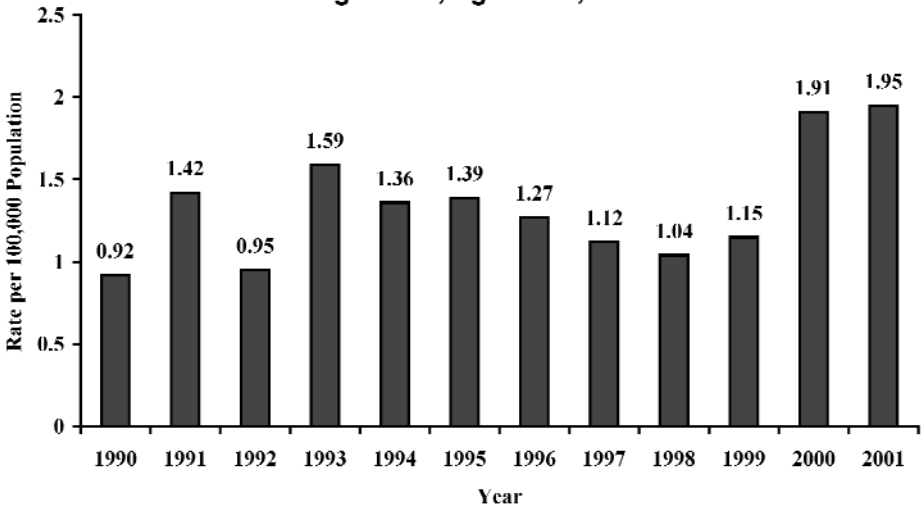


Figure 40
Michigan Accidental Suffocation and Strangulation Infant Death Rates, Ages 0-1, 1990-2001

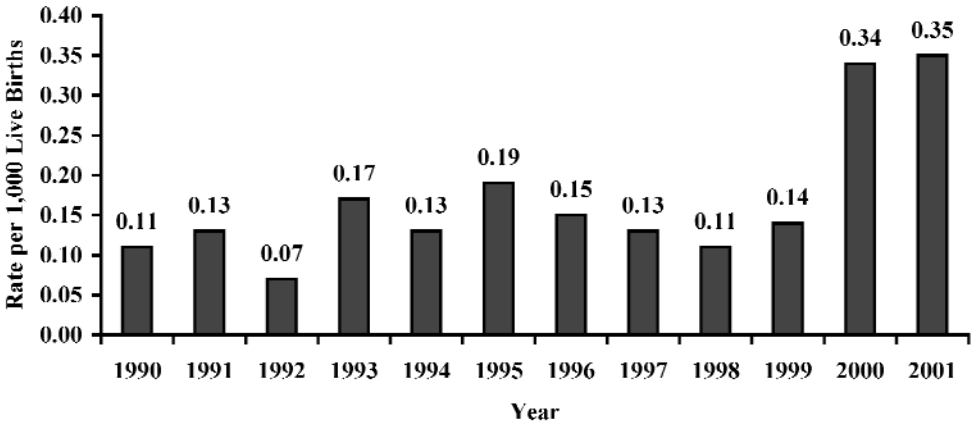
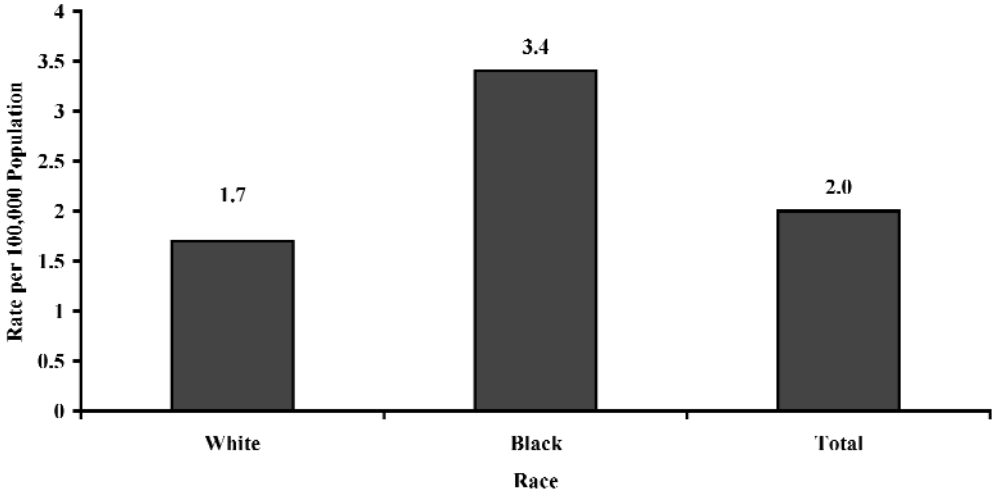


Table 46
Number of Michigan Accidental Child Deaths Due to Suffocation and Strangulation by Age and Sex, 2001

Age	Sex		
	Male	Female	Total
Under One Year	31	15	46
1-4 Years	3	1	4
5-9 Years	0	1	1
10-14 Years	1	0	1
15-18 Years	1	0	1
Total	**36**	**17**	**53**

About 87% of all unintentional suffocation and strangulation child deaths were to infants and about 94% were to children under five.

Figure 41
Michigan Accidental Child Death Rates Due to Suffocation and Strangulation by Race*, Ages 0-18, 2001



* A rate could not be calculated for other races because the number of cases was less than six.

Child Death Review Team Findings from CDR Case Reports

CDR teams reviewed 54 accidental suffocation deaths in 2001. Seventeen of the victims were female and 37 were male. Thirty-three of the victims were white, 17 were black, three of the victims were multiracial and in one case, race was unknown.

Table 47
Number and Percent of Suffocation Deaths Reviewed by Age, 2001

Age	Number	Percent
Under One Year	44	81.5
1-4 Years	6	11.1
5-9 Years	0	0.0
10-14 Years	2	3.7
15-18 Years	2	3.7
Total	**54**	**100.0**

Table 48
Number and Percent of Suffocation Deaths Reviewed by Type, 2001

Suffocation Type	Number	Percent
Overlay by Person while Sleeping	25	46.3
Suffocation in Bedding	16	29.6
Choking on Toy or Food	5	9.3
Strangulation/Suffocation in Car Seat	3	5.5
Other	5	9.3
Total	**54**	**100.0**

Twenty-five children died when they were accidentally smothered by persons with whom they were sleeping.

Overlay by a Person While Sleeping

Twenty-five children died when they were accidentally smothered by persons with whom they were sleeping. Of these, 12 were sleeping in adult-style beds, 12 were sleeping with others on couches and one occurred on the floor.

All of these children were infants: 12 were less than two months old, nine were between two and four months old and four were between five and 12 months old.

Seventeen infants were from low-income families, two were middle-income, one was high-income and no answer was given in five cases.

In two of these cases, the teams reported that the parent may have been intoxicated.

In six cases the teams reported that the sleeping environment was overcrowded, with both parents and/or siblings sharing the bed with the infant. This information was not provided in three cases.

Suffocation in Bedding While Sleeping

Sixteen children died when they were smothered by heavy or bulky blankets, other bedding, objects in their beds or were wedged into their beds. Of these, seven were sleeping in adult beds, five were sleeping in a crib, one child was sleeping on a couch, one on an air mattress and one child was sleeping on a floor. In one case, the sleeping location was not indicated.

In nine cases, the child was found face down in pillows, blankets or comforters. In four cases, the infants were wedged: one infant rolled off an air mattress and became wedged between the mattress and couch, one infant was wedged into the back of a couch while sleeping with her mother, one infant was wedged between two twin mattresses while sleeping between his parents and one was sleeping with his mother when he became wedged between the mattress and the wall.

One infant smothered when her bottle was propped tightly up against her mouth and one infant fell off a bed into a pile of clothes. In one case, specific information was not given.

All of these children were infants: three were less than two months old, six were two to three months old and seven were four to six months old. Eleven infants were from low-income families, two were middle-income and no answer was given for three infants. Parents' use of alcohol was cited as a factor in two deaths.

Choking on Toy or Food

Five children died from choking, including a preschooler playing with a balloon, an infant choking on a small toy while unsupervised, two school-aged children choking on food and an infant choking on a pacifier. One of the children was middle-income and four were low-income.

Strangled or Suffocated in Car Seat

Three children died in car seats, including a four-month-old, a ten-month-old and a one-year-old. All of the children had been left alone while sleeping in their car seats. None of the seats were secured to a surface. In one case, the seat fell forward off the seat of a car, and the baby strangled on the seat straps. Another seat was sitting in a crib. The baby wiggled down and became wedged in the seat portion and suffocated. The other was sitting on an adult bed, and the baby was found strangled by the seat straps.

Other Suffocation and Strangulation

Five other children died due to unintentional suffocation. These included a toddler who slipped through a high chair and strangled in the straps; a toddler who was crushed by furniture while trying to climb it; a school-aged child who suffocated in a plastic bag filled with nitrous oxide; a toddler who fell head first into a hole in the ground and was suffocated by the dirt that poured in on top and a teen who was crushed by a tractor.

Local teams assessed that 86% of these deaths were probably or definitely preventable.

Local Initiatives to Prevent Child Deaths

Local teams proposed a total of 31 accidental suffocation prevention initiatives. Examples of these prevention initiatives include:

- Contacted Consumer Product Safety Commission and researched types of pacifiers; talked to hospitals about incident associated with pacifier so they can revisit their policies.
- Conducted a campaign to encourage holding a baby while feeding rather than propping bottles on bedding.
- Provided information on bed sharing.
- Provided safe sleep information.

Recommendations for Policymakers Regarding Child Suffocation and Strangulation Deaths

(Note: some of these recommendations are the same as those in the SIDS and Undetermined Sections.)

1. In every county, the prosecuting attorney, law enforcement agencies, medical examiner and the Family Independence Agency should jointly adopt and implement a child death scene investigation protocol using the *State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths* as a model.
2. The Michigan Department of Community Health and the Family Independence Agency should collaborate to implement a statewide campaign that promotes safe infant sleep environments and explicitly describes the dangers posed to infants in bed-sharing and other unsafe sleep environments.

Recommendations for Parents and Caregivers

- Practice the recommendations from the Consumer Product Safety Commission (CPSC) for safe infant sleep environments. (See the Section on SIDS.)
- Keep all small objects, cords and ropes away from infants and toddlers.

Accidental - Fire and Burn

Michigan Mortality Data from Death Certificates

In 2001, 33 Michigan children died from unintentional fires and burns.

Figure 42
Michigan Accidental Child Deaths Due to Fire and Burn, Ages 0-18, 1990-2001

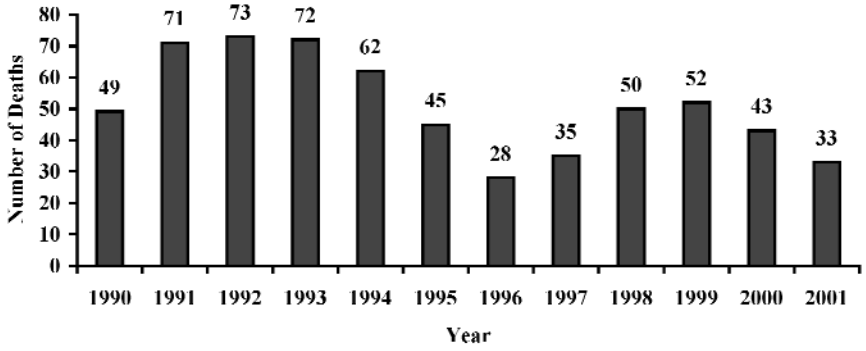


Figure 43
Michigan Accidental Child Death Rates Due to Fire and Burn, Ages 0-18, 1990-2001

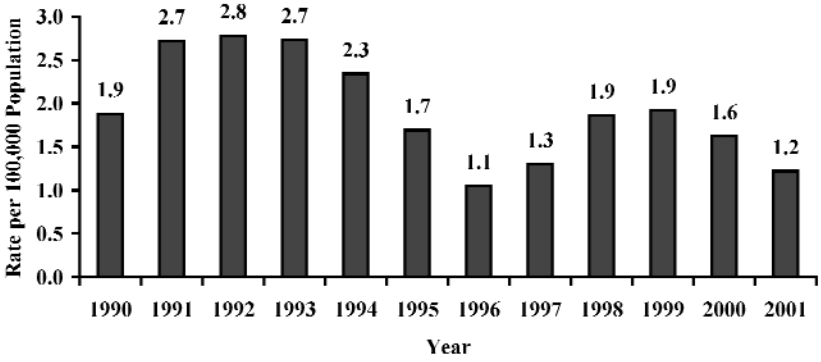
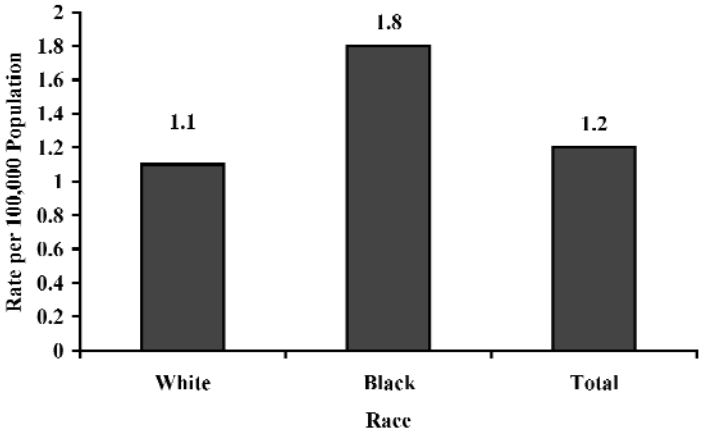


Table 49
Number of Michigan Accidental Child Deaths Due to Fire and Burn by Age and Sex, 2001

Age	Sex		
	Male	Female	Total
Under One Year	2	4	6
1-4 Years	6	2	8
5-9 Years	6	1	7
10-14 Years	3	3	6
15-18 Years	5	1	6
Total	**22**	**11**	**33**

Figure 44
Michigan Accidental Child Death Rates Due to Fire and Burn by Race*, Ages 0-18, 2001



* A rate could not be calculated for other races because the number of cases was less than six.

Child Death Review Team Findings from CDR Case Reports

CDR teams reviewed 37 accidental fire deaths in 2001. Thirteen of the victims were female and 24 were male. Of the 37 victims, 20 were white and 17 were black. About 49% of the victims were children under five years of age.

Table 50
Number and Percent of Accidental Child Deaths Due to Fire and Burn Reviewed by Age, 2001

Age	Number	Percent
Under One Year	5	13.5
1-4 Years	13	35.1
5-9 Years	10	27.0
10-14 Years	4	10.8
15-19 Years	5	13.5
Total	**37**	**100.0**

Teams found that children playing with lighters, matches and candles caused 12 deaths or about 32% of all accidental fire deaths.

Table 51
Number and Percent of Accidental Fire and Burn Deaths Reviewed by Fire Source, 2001

Source of Fire	Number	Percent
Lighter	8	21.6
Heater	5	13.5
Candle	5	13.5
Appliances	4	10.8
Matches	2	5.4
Faulty Wiring	1	2.7
Other	2	5.4
No Answer/Unknown	10	27.0
Total	**37**	**100.0**

In ten of the accidental fire deaths, it was known that no smoke alarm was present and in six cases, smoke alarms were present, but did not have good batteries.

Twenty-one of the fires occurred in wood frame houses and one was a brick frame. Three of the fire deaths occurred in trailers. Twenty-five of the 37 fire deaths reviewed involved multiple injuries or deaths. Teams determined that 31 of these deaths (83.8%) were probably or definitely preventable.

Local Initiatives to Prevent Child Deaths

Local teams proposed 23 fire prevention initiatives. Examples of these include:

- Funding was restored to the fire prevention bureau. One CDR team sent letters to our city council and to the editor of the newspaper encouraging them to restore the funding.
- Allow for prosecution of accidental fires when culpability exists.
- Fire safety articles were published in the newspaper.

Recommendations for Policymakers Regarding Child Fire and Burn Deaths

1. The Michigan Department of Community Health and the Michigan State Police should collaborate to develop an awareness campaign on the increased risks of fatal house fires when children play with incendiary devices.
2. The Michigan Department of Community Health and the Michigan State Police should campaign to promote local efforts to increase the number of lithium-powered or hard-wired smoke detectors and sprinkler systems in residential dwellings.
3. The Michigan Department of Education should ensure that all school districts and daycare organizations offer fire safety education such as Risk Watch, especially in preschools and daycare settings.

Recommendations for Parents and Caregivers

- Install smoke detectors outside every sleeping area and on every floor of your home; test them monthly, clean them periodically and keep fresh batteries in them if they are not hard-wired or equipped with 10-year lithium batteries.
- Keep matches, lighters and candles well out of the reach of children and teach your family how to escape from your home in case of a fire.

Accidental - Drowning

Michigan Mortality Data from Death Certificates

In 2001, there were 30 accidental drowning deaths to children in Michigan.

Figure 45
Michigan Accidental Child Deaths Due to Drowning, Ages 0-18, 1990-2001

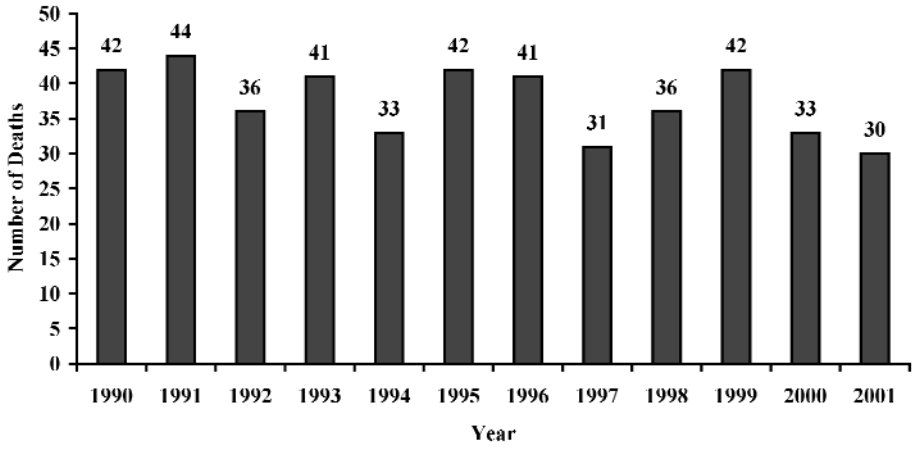


Figure 46
Michigan Accidental Child Death Rates Due to Drowning, Ages 0-18, 1990-2001

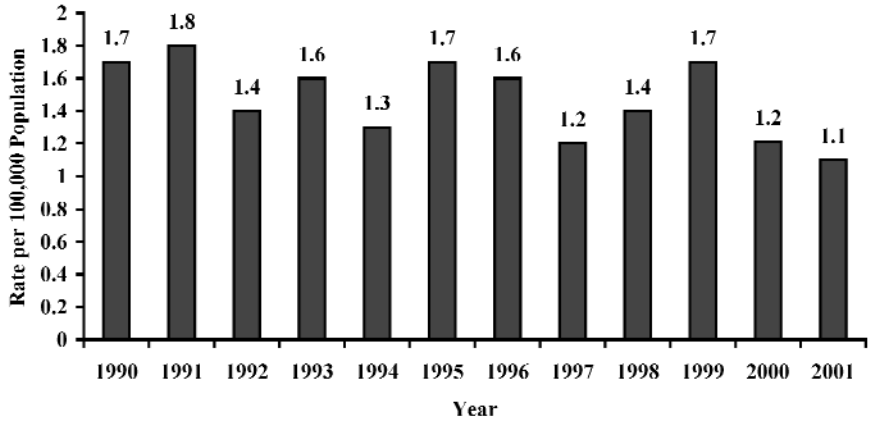
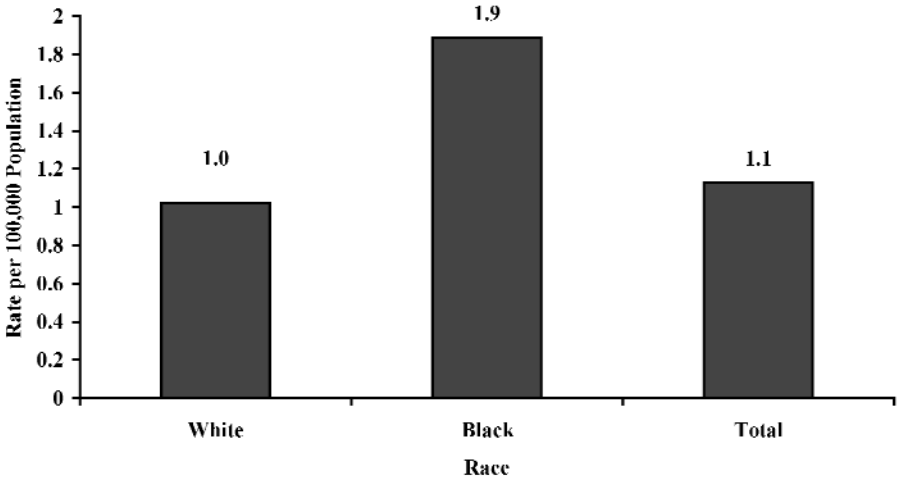


Table 52
Number of Accidental Michigan Child Deaths Due to Drowning by Age and Sex, 2001

Age	Sex		
	Male	Female	Total
Under One Year	2	4	6
1-4 Years	6	2	8
5-9 Years	6	1	7
10-14 Years	3	3	6
15-18 Years	5	1	6
Total	**22**	**11**	**33**

In 2001, 33% of all unintentional drowning deaths were to children 1-4 years of age and 23% were to children ages 15-18.

Figure 47
Michigan Accidental Child Death Rates Due to Drowning by Race*, Ages 0-18, 2000



*A rate could not be calculated for other races because the number of cases was less than six.

Child Death Review Team Findings from CDR Case Reports

In 2001, CDR teams reviewed 25 accidental drowning deaths. Seventeen of the victims were white, six were black, one was multi-racial and in one case, race was unknown. Of the 25 victims, 15 were male and 10 were female.

Table 53
Number and Percent of Child Deaths Reviewed Due to Drowning by Age, 2001

Age	Number	Percent
Under One Year	3	12.0
1-4 Years	7	28.0
5-9 Years	2	8.0
10-14 Years	7	28.0
15-18 Years	6	24.0
Total	**25**	**100.0**

Of the 25 drowning victims, 15 were male and 10 were female.

Table 54
Number and Percent of Drowning Deaths Reviewed by Location, 2001

Place of Drowning	Number	Percent
Swimming Pool	10	40.0
Lake, River or Pond	9	36.0
Bathtub	3	12.0
Other	3	12.0
Total	**25**	**100.0**

The three deaths indicated as "other" occurred in a ditch, a hot tub and in a yard on public property. In 68% of all of the drowning deaths reviewed, local teams found that supervision was inadequate at the time the drowning occurred.

Three of the 10 swimming pools were not completely fenced. Three children entered a gate while unattended and in two of those cases, the gate was not locked. In two of the bathtub incidents, the caretaker was relying on a bath seat or bathtub ring to secure the child while they were out of the room.

Table 55
Number and Percent of Child Drowning Deaths Reviewed by Activity, 2001

Activity	Number	Percent
Playing at Water's Edge	10	40.0
Bathing	8	32.0
Swimming	4	16.0
Playing	2	8.0
Other	1	4.0
Total	**25**	**100.0**

Local teams found that 88% of these accidental drowning deaths were preventable.

Local Initiatives to Prevent Child Deaths

Local teams proposed 22 drowning prevention initiatives. Examples of these initiatives include:

- Education in CPR and the use of defibrillators will be provided to state park rangers.
- Reviews of day care licensing regulations were recommended as they pertain to pools and hot tubs.
- Public service announcements were on the local radio station warning residents of the dangers caused by open pit areas and abandoned wells.
- Public service announcements were run containing tips on how to choose safe and competent child care.
- The Consumer Product Safety Commission was contacted suggesting labels on hot tubs with warnings about the possibility of losing consciousness when staying in too long or setting temp too high.
- Public service announcements were run to remind parents about watching children around water at all times and to have them wear PFDs.

Recommendations for Policymakers Regarding Child Drowning Deaths

1. Enforce the Michigan Construction Codes that require local units of government to adopt and enforce pool-fencing regulations.
2. The Family Independence Agency's Office of Children and Adult Licensing should review current daycare licensing guidelines for barriers to pools, hot tubs or open bodies of water at regulated daycare homes.

Recommendation for Parents and Caregivers

- When you are near any pool or body of water, always designate one adult to keep sight of all the children, at all times.

Accidental – Firearm

Michigan Mortality Data from Death Certificates

In 2001, there were four accidental firearm deaths to children in Michigan.

Figure 48
Michigan Accidental Child Deaths Due to Firearms, Ages 0-18, 1990-2001

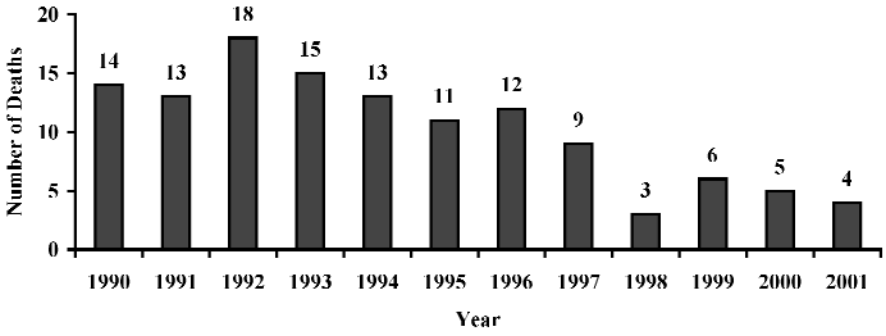
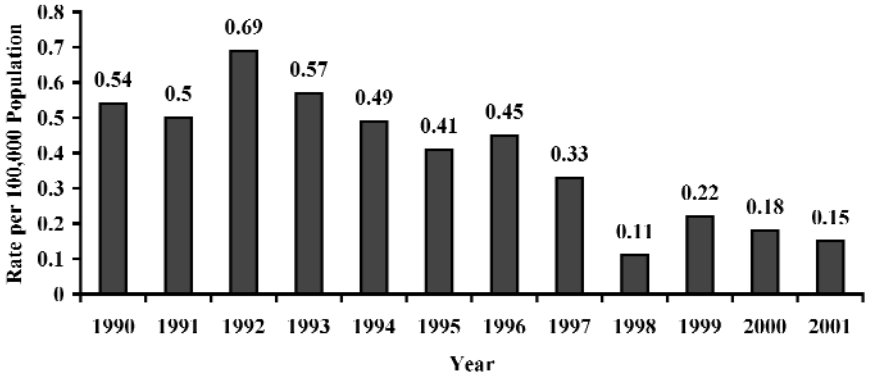


Figure 49
Michigan Accidental Child Death Rates Due to Firearms, Ages 0-18, 1990-2001



In the four unintentional firearm-related deaths in 2001, two of the victims were between 15-19 years of age and the other two were between 10-14 years of age; two were to black children and the other two were to white children. All four victims were male.

Child Death Review Team Findings from CDR Case Reports

CDR teams reviewed seven unintentional firearm deaths in 2001. Two of the victims were between 15 and 18 years of age, four were between 10 and 14 years of age, and one was between five and nine years of age. Four of the victims were white and three were black. All were male. In five of the seven cases, a child was handling the weapon. A family member and a friend handled the weapon in the remaining two cases. In four of the cases, the firearm was not locked in a cabinet. In five of the cases, there was no trigger lock on the firearm. Teams found the supervision of the child to be inadequate in five of the seven cases reviewed. One case was a hunting accident in which the child had a hunting license but had not completed a hunter's safety course.

In four of the cases reviewed, the firearm was not locked in a cabinet. In five deaths, there was no trigger lock on the firearm.

Teams found that all seven of the unintentional firearm deaths were preventable.

Local Initiative to Prevent Child Deaths

One prevention initiative related to accidental firearm death was proposed by a local team. It involved supervision guidelines for foster children.

Recommendations for Policymakers Regarding Accidental Firearm Deaths to Children

1. The Michigan Attorney General's Office should ensure statewide enforcement of the statutes that require:
    a. Federally licensed firearm dealers to provide, at the point of sale, written materials on gun safety and the proper storage of guns in homes with children;
    b. Federally licensed firearm dealers not to sell a firearm in Michigan, without a commercially available trigger lock or other device designed to disable the firearm and prevent it from discharging.
2. The Michigan Legislature should enact legislation that provides specific criminal penalties to adults who are negligent in the safekeeping of guns that are used to injure or kill children.

Recommendations for Parents and Caregivers

- If you own guns, they should be properly stored. Keep them in locked cabinets with gun safety devices in place. Store ammunition in a separate locked cabinet.
- Recognize and seek professional help if your child displays violent behavior.
- Assess the safety of firearms storage of the homes that your children visit.

Accidental – Other Causes

Michigan Mortality Data from Death Certificates

In 2001, 27 Michigan children died due to other accidental causes. These include poisonings, falls and electrocutions.

Figure 50
Michigan Accidental Child Deaths Due to Other Causes, Ages 0-18, 1990-2001

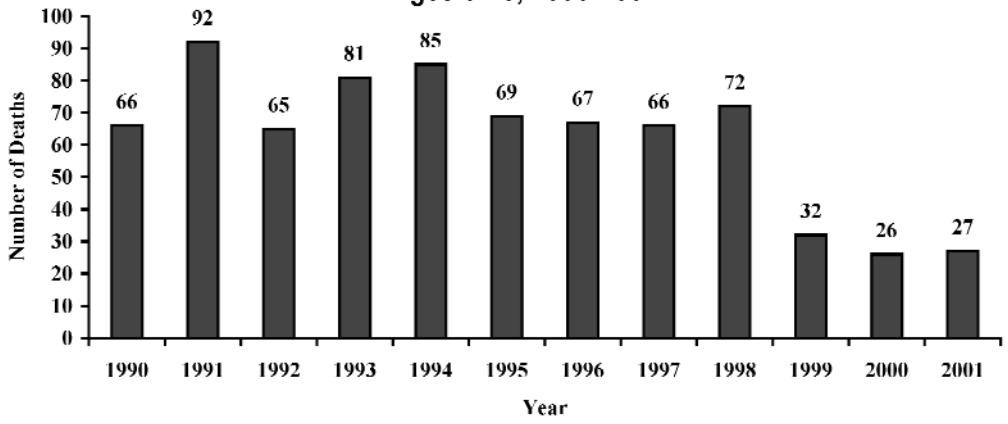


Figure 51
Michigan Accidental Child Death Rates Due to Other Causes, Ages 0-18, 1990-2001

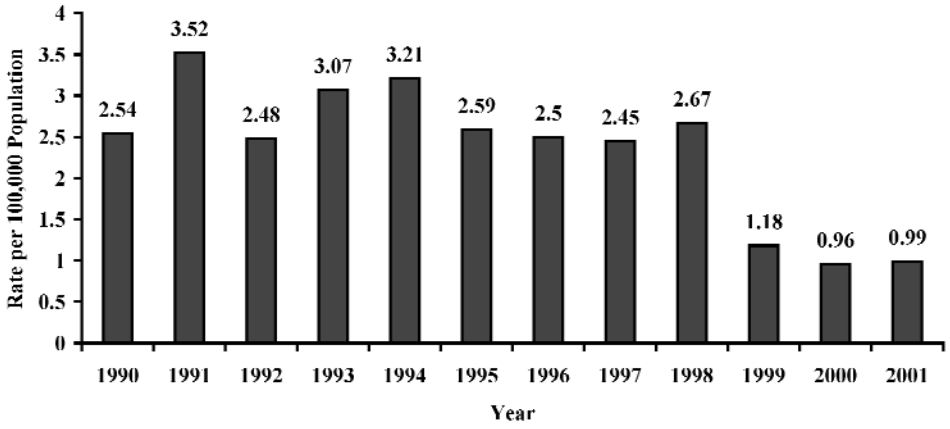


Table 56
Number of Michigan Accidental Child Deaths Due to Other Causes by Age and Sex, 2001

Age	Sex		
	Male	Female	Total
Under One Year	0	1	1
1-4 Years	3	3	6
5-9 Years	2	2	4
10-14 Years	4	3	7
15-18 Years	8	1	9
Total	**17**	**10**	**27**

Table 57
Number and Percent of Michigan Accidental Child Deaths Due to Other Causes by Race, 2001

Race	Number	Percent
White	19	70.4
Black	8	29.6
Other	0	0.0
Total	**27**	**100.0**

Table 58
Number and Percent of Michigan Accidental Child Deaths Due to Other Causes, 2001

Cause	Number	Percent
Poisoning	8	29.6
Falls	4	14.8
Other Accidents	10	37.0
Other and Unspecified Transport Accidents	5	18.5
Total	27	100.0

Child Death Review Team Findings from CDR Case Reports

Teams reviewed 19 cases of accidental death due to other causes in 2001. Six of the victims were female and 13 were male. Of the 19 victims, 12 were white, six were black and in one case, race was unknown.

Table 59
Number and Percent of Accidental Deaths Reviewed Due to Other Causes by Age, 2001

Age	Number	Percent
Under One Year	0	0.0
1-4 Years	3	15.8
5-9 Years	4	21.1
10-14 Years	5	26.3
15-18 Years	7	36.8
Total	**19**	**100.0**

Table 60
Number of Accidental Deaths Reviewed by Other Causes, 2001

Cause	Number
Poisoning	7
Falls	5
Electrocution	2
Died During Surgery	2
TV Fell on Child	2
Trench Collapse	1
Total	**19**

Seven of the cases reviewed were accidental poisonings. The substances ingested include prescription and over-the-counter medications, carbon monoxide and an air freshener. Most of these cases involved teenagers trying to get high.

CDR teams identified a lack of supervision as a factor contributing to the accidental poisoning deaths in three cases. Teams believed that five of the accidental poisoning cases were preventable. In one case, the team was unsure if the death was preventable. The team did not answer the preventability question in one case.

Five of the cases reviewed were accidental falls. These include a fall from a bicycle, one from a tree, one from a store display and a fall while snowboarding. CDR teams believed that three of the five accidental fall cases were preventable.

Two of the cases reviewed were accidental electrocutions; in one case, a child was electrocuted by a downed power line; in the other, an older teen was electrocuted while repairing a roof. CDR teams believed that both of these deaths were preventable.

Two of the cases reviewed by teams in 2001 incidents involved televisions placed on furniture not designed as television stands. The children died when the televisions fell over and crushed them. CDR teams felt that both of these deaths were preventable.

One older teen died when he fell into a trench while working, and the sides caved in. Two deaths occurred when children died unexpectedly during routine surgeries.

Overall, CDR teams believed that of the 19 deaths due to other unintentional injuries, 26% involved inadequate supervision and 68% were believed to have been preventable.

Local Initiatives to Prevent Child Deaths

Local teams proposed five prevention initiatives regarding other accidental injury deaths. Examples of the initiatives include:

- Team wrote a letter to their State Senators and Representatives to request that electrical code/building codes be changed to require power supply to homes be insulated from approximately 10 feet away from the home.
- Team contacted Consumer Product Safety Commission regarding the safety of a particular piece of furniture.

Recommendations for Parents and Caregivers

- Be sure that all areas of the house are "child proofed," including stairs, electrical outlets, storage cabinets and medication bottles.
- Helmets should be worn during recreational activities as recommended.

Section Five:
Homicide

Overview of Child Homicides, Ages 0-18

Homicide-Firearm and Weapon

Homicide-Child Abuse and Neglect

Homicide-Other Causes

Overview of Child Homicides, Ages 0-18

Michigan Mortality Data from Death Certificates

In 2001, there were 72 child homicides in Michigan. It is believed, however, that this number is actually higher because child abuse and neglect homicides are undercounted on death certificates (see the section on child abuse homicides).

Figure 52
Michigan Child Homicides, Ages 0-18, 1990-2001

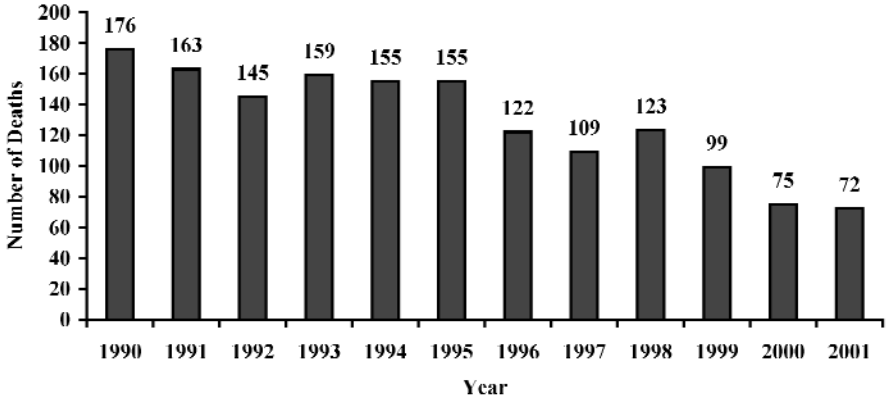
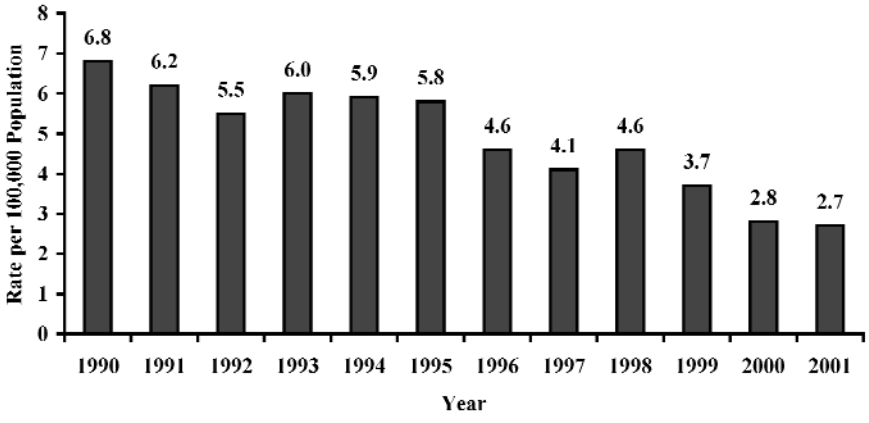


Figure 53
Michigan Child Homicide Rates, Ages 0-18, 1990-2001



In 2001, the rate for child homicides was 2.7 deaths per 100,000 population. This is a decrease of 60% from the 1990 rate of 6.8 deaths per 100,000 population.

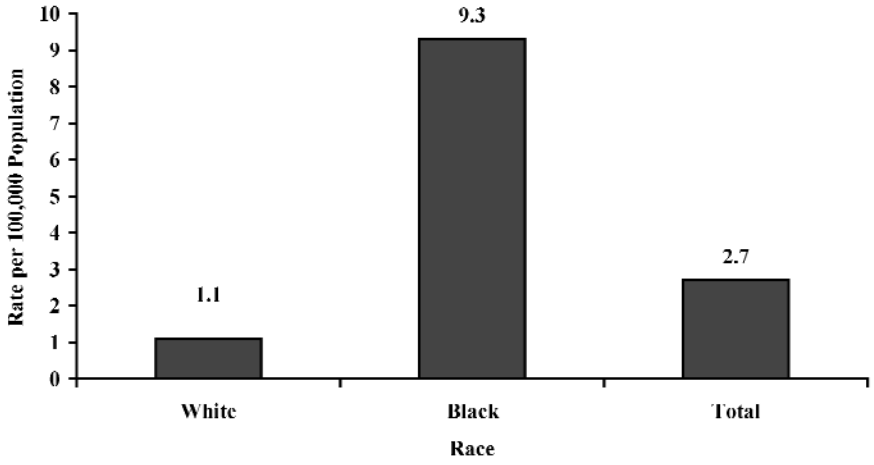
Table 61
Number of Michigan Child Homicides
by Age and Sex, 2001

Age	Sex		
	Male	Female	Total
Under One Year	5	5	10
1-4 Years	9	3	12
5-9 Years	5	1	6
10-14 Years	6	3	9
15-18 Years	30	5	35
Total	**55**	**17**	**72**

The 2001 homicide rate for black children was 9.3, about 8.5 times greater than the rate for white children.

The homicide rate for black children was 9.3 deaths per 100,000 population in 2001, about 8.5 times greater than the homicide rate for white children.

Figure 54
Michigan Child Homicide Rates by Race*,
Ages 0-18, 2001



* A rate could not be calculated for other races because the number of cases was less than six.

Table 62
Number and Percent of Michigan Child Homicides by Cause, Ages 0-18, 2001

Cause	Number	Percent
Firearm and Weapon	46	63.9
Child Abuse and Neglect	14	19.4
Fire and Burn	3	4.2
Suffocation and Strangulation	2	2.8
All Other External Causes	7	9.7
Total	**72**	**100.0**

Homicide - Firearm and Weapon

Michigan Mortality Data from Death Certificates

In 2001, there were 46 child homicides caused by firearms and weapons.

Figure 55
Michigan Child Homicides Due to Firearm and Weapon, Ages 0-18, 1990-2001

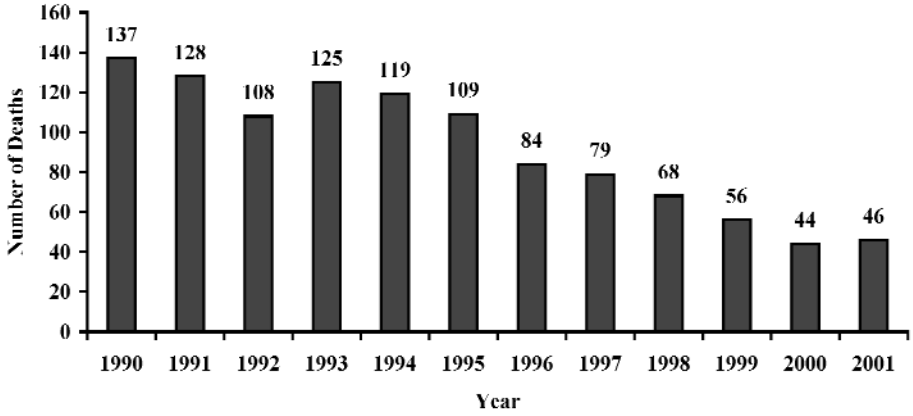
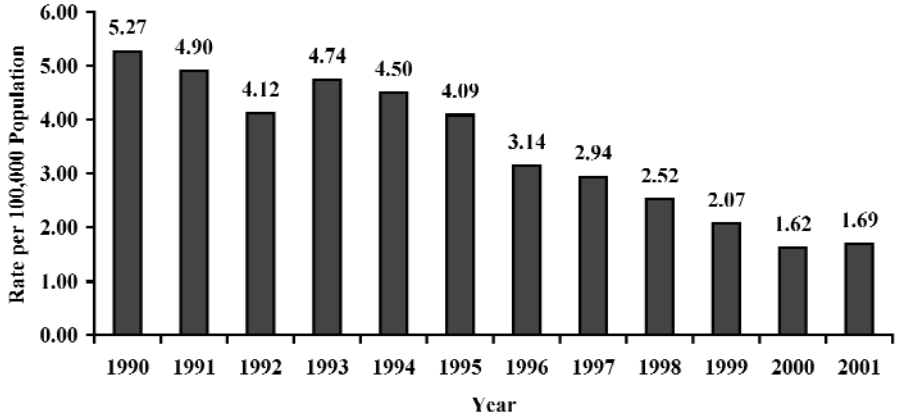


Figure 56
Michigan Child Homicide Rates Due to Firearm and Weapon, Ages 0-18, 1990-2001



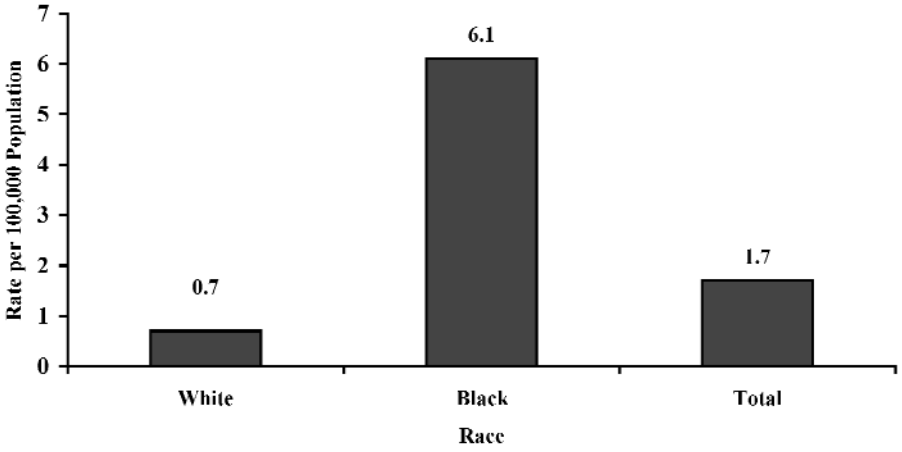
The child death rate for homicide due to firearm and weapon was 1.69 deaths per 100,000 population in 2001, a decrease of 66% from the 1990 rate.

Table 63
Number of Michigan Child Homicides Due to Firearm and Weapon by Age and Sex, 2001

Age	Sex		Total
	Male	Female	
Under One Year	0	1	1
1-4 Years	2	1	3
5-9 Years	2	1	3
10-14 Years	5	3	8
15-18 Years	27	4	31
Total	**36**	**10**	**46**

The homicide rate due to firearm and weapon for black children was 6.1 deaths per 100,000 population in 2001, about nine times greater than the rate for whites.

Figure 57
Michigan Child Homicide Rates Due to Firearm and Weapon by Race*, Ages 0-18, 2001



* A rate could not be calculated for other races because the number of cases was less than six.

Child Death Review Team Findings from CDR Case Reports

In 2001, local teams reviewed 38 firearm and weapon-related homicides. The majority of these were to black males (68%). Most of the deaths reviewed were to children ages 15 to 18 (74%). Thirty-two of the 38 homicides reviewed, or 84%, occurred in Wayne County.

Table 64
Number of Child Homicides Due to Firearm and Weapon Reviewed by Race and Sex, 2001

Race	Male	Female	Total
White	4	2	6
Black	26	6	32
Other	0	0	0
Total	**30**	**8**	**38**

Table 65
Number and Percent of Child Homicides Due to Firearm and Weapon Reviewed by Age, 2001

Age	Number	Percent
Under One Year	2	5.3
1-4 Years	1	2.6
5-9 Years	1	2.6
10-14 Years	6	15.8
15 Years	2	5.3
16 Years	11	26.3
17 Years	5	13.2
18 Years	11	28.9
Total	**38**	**100.0**

Victims of firearm and weapon-related homicides were typically murdered by someone known to them.

Teams found that children who died from firearm and weapon-related homicides were typically murdered by someone known to them. The perpetrator was a friend or acquaintance in 37% of the cases, and a family member in eight percent of the cases.

Table 66
Number and Percent of Child Homicides Due to Firearm and Weapon Reviewed by Relationship of Person Handling the Weapon, 2001

Relationship	Number	Percent
Acquaintance	13	34.2
Stranger	9	23.7
Family Member	3	7.9
Friend	1	2.6
No Answer/Unknown	12	31.6
Total	**38**	**100.0**

In 80% of the firearm deaths, a handgun was the weapon used.

In the majority of the firearm deaths (80%), a handgun was the weapon used. The team believed that the perpetrator "intended harm" in 31 of the 38 cases. Teams found that in deaths caused by a firearm, the firearm was not stored in a locked cabinet in 80% of the cases, and did not have a trigger lock in 76% of the cases.

The child's socio-economic status was determined to be low in 74% of the firearm and weapon homicides. In 76% of these deaths, the CDR teams determined that the firearm and weapon homicides were probably or definitely preventable.

Local Initiatives to Prevent Child Deaths

Local teams identified three firearm homicide prevention initiatives. Emphasized were the importance of educating children in schools in the areas of conflict resolution and communicating anti-drug messages.

Recommendation to Policymakers Regarding Child Homicides Due to Firearm and Weapon

1. State agencies should partner with communities experiencing high rates of teen homicides to identify the neighborhoods most at risk, and implement comprehensive violence prevention interventions.

Recommendations for Parents and Caregivers

- If you own guns, they should be properly stored. Keep them in locked cabinets with gun safety devices in place. Store ammunition in a separate locked cabinet.
- Assess the safety of firearms storage of the homes that your children visit.
- Be knowledgeable about your child's activities when they are with friends
- Recognize and seek professional help if your child displays violent behavior.

Homicide - Child Abuse and Neglect

Michigan Mortality Data from Death Certificates

In 2001, 14 Michigan children were reported on death certificates to have died from child abuse and neglect.

Figure 58
Michigan Child Homicides Due to Abuse and Neglect, Ages 0-18, 1990-2001

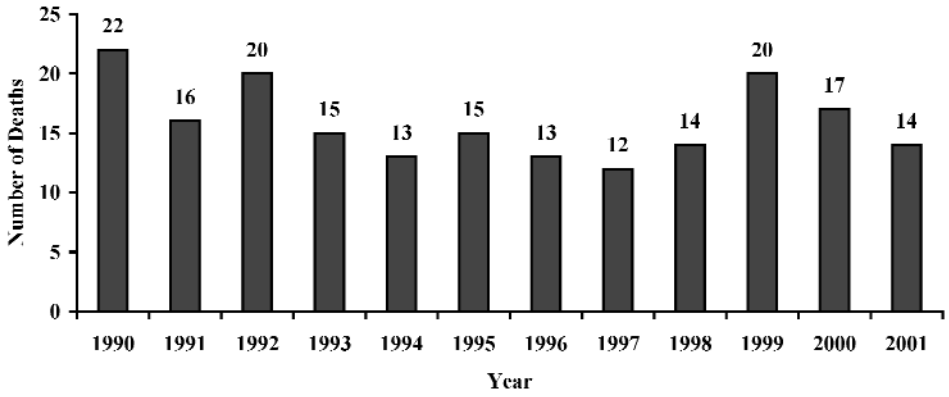
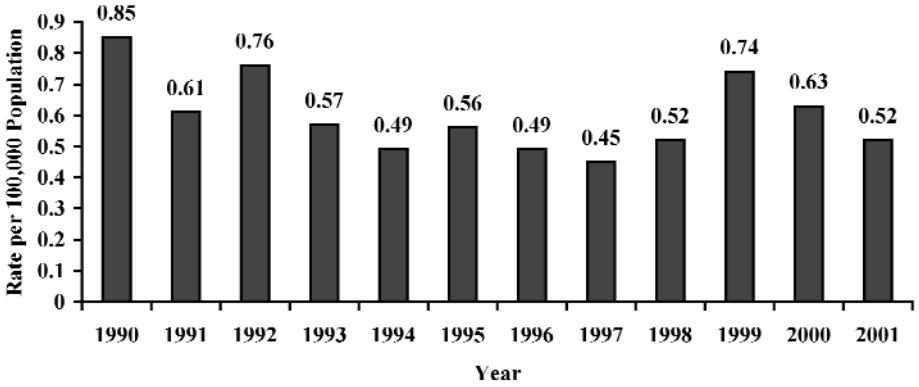


Figure 59
Michigan Child Homicide Rates Due to Abuse and Neglect, Ages 0-18, 1990-2001



Michigan Child Maltreatment Mortality Data from Other Sources

Death certificates do not provide a complete count of child abuse and neglect deaths. National studies have repeatedly confirmed this. For example, some death certificates may list a death as a homicide by assault, or an accident by gross negligence but the coding does not capture that a child's caregiver caused the death. Therefore it is not counted as a death from child abuse or neglect.

Death certificates do not, provide a complete count of child abuse and neglect deaths.

To try and better count these deaths, a study funded by the U.S. Centers for Disease Control and Prevention was conducted of 2001 deaths using four sources of data: the Family Independence Agency records on child deaths of children receiving FIA services, Michigan State Police homicide data, CDR reports and MDCH death certificates. A total of 40 cases of child maltreatment were identified. The following mortality data is based on these 40 deaths, not the 14 as listed above. The mortality data listed in the previous two charts shows no trend of an increase or decrease in rates over time. Although 40 deaths were identified for 2001, it is not known if this is an actual decrease or increase over time either, without conducting further retrospective analysis of multiple databases.

Table 67
Number of Michigan Child Homicides Due to Abuse and Neglect by Age and Sex, 2001, from Multiple Data Sources

Age	Sex		
	Male	Female	Total
Under One Year	20	6	26
1-4 Years	7	1	8
5-9 Years	3	1	4
10-14 Years	1	1	2
15-18 Years	0	0	0
Total	**31**	**9**	**40**

Table 68
Number of Michigan Child Homicides Due to Abuse and Neglect by Race and Sex, 2001, from Multiple Data Sources

Age	Sex		
	Male	Female	Total
White	10	5	15
Black	20	4	24
Other	1	0	1
Total	**31**	**9**	**40**

Child Death Review Team Findings from CDR Case Reports

Local teams reviewed 16 homicides deemed due to child abuse and neglect in 2001. Of those 16 cases, seven of the victims were under the age of one and a total of 13 victims were under the age of four. Eleven of the victims were boys. Ten children were black. Socio-economic status was indicated to be low in 10 of the deaths and middle in five.

The type of abuse causing the deaths included beating and battering (12), shaken baby syndrome (3) and medical neglect (1).

Six children were killed by their mother's boyfriend and two by their mothers. One child each was killed by a father, a foster mother's husband, a foster mother, a teenage sibling, a licensed child care worker, a baby sitter and a stranger. In one death, the perpetrator was unknown.

It was reported that in at least eight cases, the abuse most often occurred when the persons caring for the children reacted to the children's crying. Only one caregiver offered a confession during the investigation. Other explanations given for the children's injuries included:

- Child banged own head on cement floor.
- Child fell down stairs.
- Dad was not at home and boyfriend caused death.
- Child was choking.
- Child had been vomiting for two days then fell on stairs.
- Left the child in the bathtub and when he returned the child was not breathing.
- Accidentally dropped the baby down a flight of stairs
- A sibling was hitting the child.

Of the 16 homicides, there had been prior CPS involvement with four of the children, but none had open cases at the time of their deaths. There was prior CPS involvement with three of the children's family members.

Local teams found that 15 of the 16 homicides due to child abuse and neglect were preventable.

The reviews by specific type of abuse are as follows:

Beating/Battered Child Syndrome
In 2001, 12 children died after being beaten or battered by a caregiver. Eight of the twelve victims were male. Eight were black, three were white and one was American Indian. Five of the children were under the age of one and six were between the ages of one and four. The socio-economic status was indicated to be low in nine of the deaths. At autopsy, there was evidence of prior injuries not reported to CPS in eight deaths.

Crying was the identified trigger in half of the cases. The perpetrator was a male in nine of the cases, and the mother's live-in boyfriend in six. Arrests were made in eight of the cases, and were pending in four at the time of this report. The CDR teams believed all 12 of these deaths were either "probably" or "definitely" preventable.

Three of the 16 homicides were the result of SBS.

Shaken Baby Syndrome (Abusive Head Trauma)
Three of the 16 homicides due to child abuse and neglect were the result of SBS, a severe form of head injury caused by a violent shaking of an infant or young child in which the brain is severely damaged, sometimes resulting in death. All three of the children who died from SBS were male, two were from middle class homes, two were white and the other was black. The children were two months, seven months and just under three years of age respectively when they were shaken.

Of the three SBS perpetrators, one was the biological father, one was the husband of a foster mother (whose existence she hid from the placement agency), and one was a female caregiver. Crying was the trigger in two of the incidents, with the third listed as "unknown." All three perpetrators were charged criminally (two with Involuntary Manslaughter and one with 1st Degree Child Abuse). One was found not guilty, one was sentenced to community service and the other served six months limited incarceration (weekends).

The CDR teams agreed that all three SBS deaths were "definitely" preventable.

Local Initiatives to Prevent Child Deaths

Local teams proposed two child abuse prevention initiatives, involving a "never shake a baby" campaign and requesting that new moms be followed more than 30 days postpartum.

Recommendations for Policymakers Regarding Child Homicides Due to Abuse and Neglect

1. The Family Independence Agency should increase and improve the resources available to educate and support the medical community and other mandated reporters to understand, identify and report suspected child abuse and/or neglect.
2. The Michigan Department of Community Health, the Michigan Family Independence Agency and the Michigan Department of Education should collaborate in developing a nurse home visitation program targeted to first time low-income mothers based upon the successful "Nurse Family Partnership" model developed by Dr. David Olds.
3. The Michigan Family Independence Agency and the Children's Trust Fund should continue and expand their Shaken Baby Prevention Campaign to an expanded focus on all physical assaults.

Recommendations for Parents and Caregivers

- Make sure that your choice of a caretaker or babysitter is a patient person, who is experienced in caring for children, has positive feelings for your child and is not prone to violent behavior, drug abuse or alcoholism.
- If you are feeling overwhelmed or frustrated by your child, call someone you trust and find a way to calm yourself. Never strike, shake or throw your child.

Homicide - Other Causes

Michigan Mortality Data from Death Certificates

There were 12 child homicides that were due to causes other than firearms and weapons or child abuse and neglect in 2001.

Figure 60
Michigan Child Homicides Due to Other Causes, Ages 0-18, 1990-2001

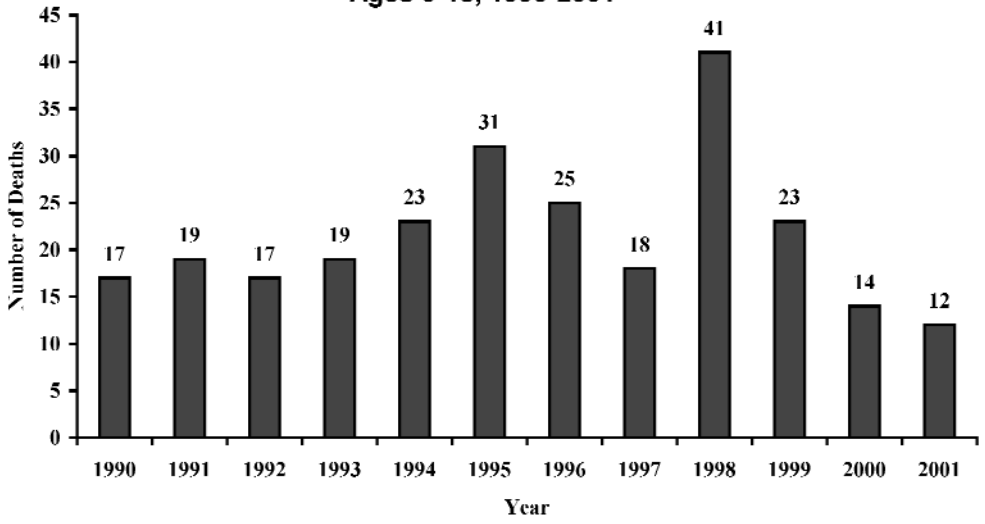


Figure 61
Michigan Child Homicide Rates Due to Other Causes, Ages 0-18, 1990-2001

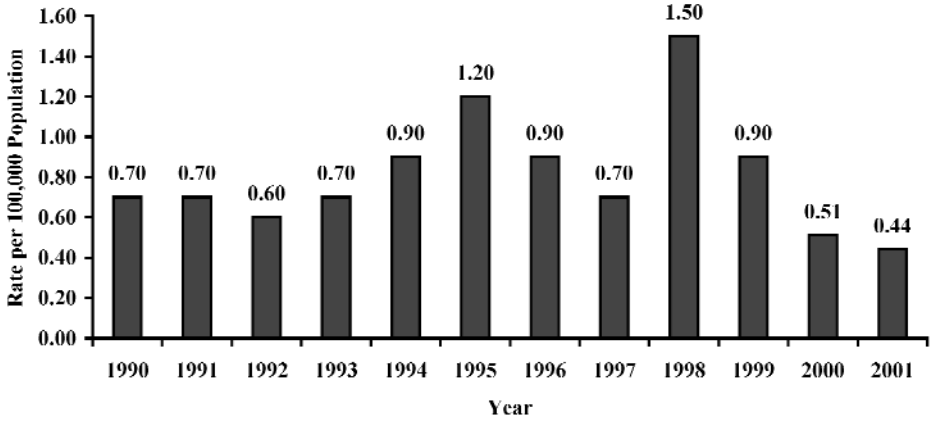


Table 69
Number of Michigan Child Homicides Due to Other Causes by Age and Sex, 2001

Age	Sex		
	Male	Female	Total
Under One Year	1	1	2
1-4 Years	3	1	4
5-9 Years	2	0	2
10-14 Years	0	0	0
15-19 Years	3	1	4
Total	**9**	**3**	**12**

Males had a 75% greater chance of dying from homicides due to other causes.

Table 70
Number of Michigan Child Homicides Due to Other Causes by Race and Sex, 2001

Race	Sex		
	Male	Female	Total
White	1	2	3
Black	8	1	9
Other	0	0	0
Total	**9**	**3**	**12**

Table 71
Number and Percent of Michigan Child Homicides Due to Other Causes, Ages 0-18, 2001

Cause	Number	Percent
Fire and Burn (Arson)	3	25.0
Suffocation and Strangulation	2	16.7
All Other External Causes*	7	58.3
Total	**12**	**100.0**

*Typically refers to "assault of either specified or unspecified means."

Child Death Review Team Findings from CDR Case Reports

The local teams reviewed nine homicide cases due to causes other than firearm and weapon or child abuse and neglect.

Two homicide cases were reviewed involving motor vehicle crashes: one in which a child was a passenger in a car which was involved in a crash during a high-speed police chase; another in which a toddler was killed when a driver purposely jumped a curb and struck the child.

Three children died in two separate arson fires. Both incidents involved houses being "firebombed" with Molotov cocktails as a retaliatory gesture.

Two cases were reviewed where the child died due to suffocation and strangulation, with the manner of death being determined as homicide. There were two cases deemed to be homicides due to natural causes.

Teams believed that seven of these nine homicides were preventable.

Local Initiatives to Prevent Child Deaths

Local teams identified two prevention initiatives related to other types of child homicide, involving information on dating and domestic violence and how to choose quality childcare.

Section Six:

Suicide

Overview of Child Suicides, Ages 0-18

Overview of Child Suicides, Ages 0-18

Michigan Mortality Data from Death Certificates

In 2001, 49 Michigan children died of suicide.

Figure 62
Michigan Child Suicides, Ages 0-18,
1990-2001

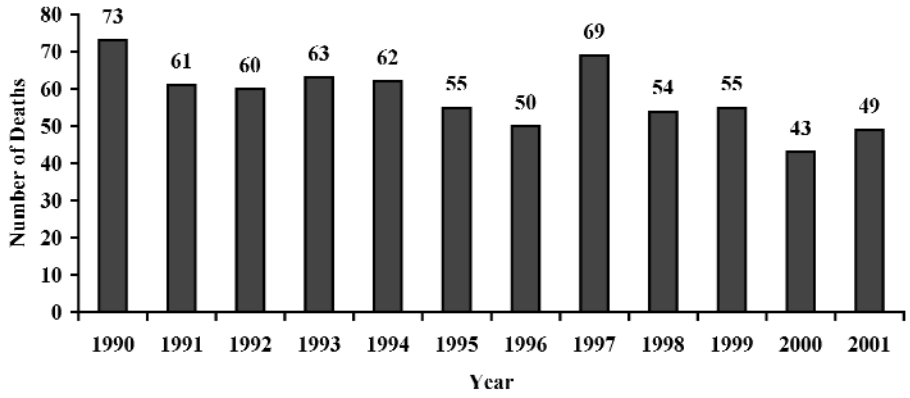


Figure 63
Michigan Child Suicide Rates, Ages 0-18,
1990-2001

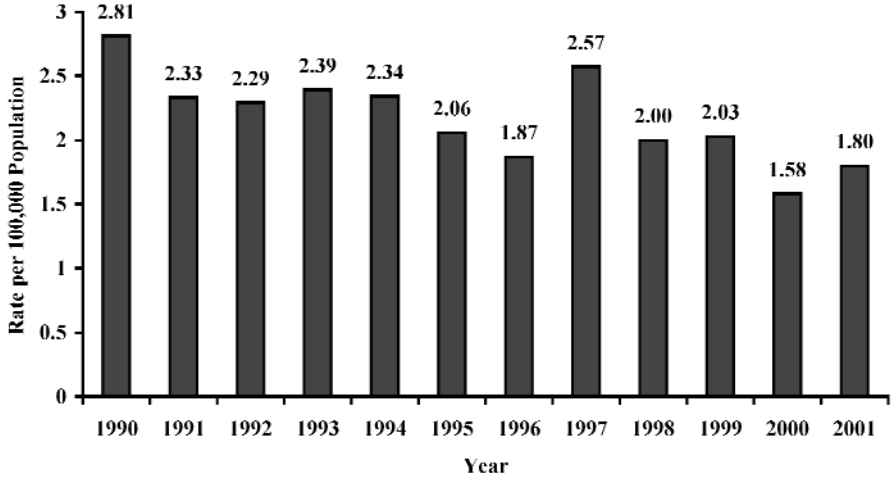


Table 72
Number of Michigan Child Suicides by Age and Sex, 2001

Age	Sex		
	Male	Female	Total
Under One Year	0	0	0
1-4 Years	0	0	0
5-9 Years	0	0	0
10-14 Years	4	5	9
15-18 Years	33	7	40
Total	**37**	**12**	**49**

Table 73
Number of Michigan Child Suicides by Race and Sex, 2001

Race	Sex		
	Male	Female	Total
White	34	9	43
Black	2	1	3
Other	1	2	3
Total	**37**	**12**	**49**

Table 74
Number and Percent of Michigan Child Suicides by Method, 2001

Cause	Number	Percent
Firearm and Weapon	26	53.1
Suffocation and Strangulation	19	38.8
Poisoning	4	8.2
Total	**49**	**100.0**

The numbers and rates of suicides, in which a firearm was used are:

Figure 64
Michigan Child Suicides Due to Firearms, Ages 0-18, 1990-2001

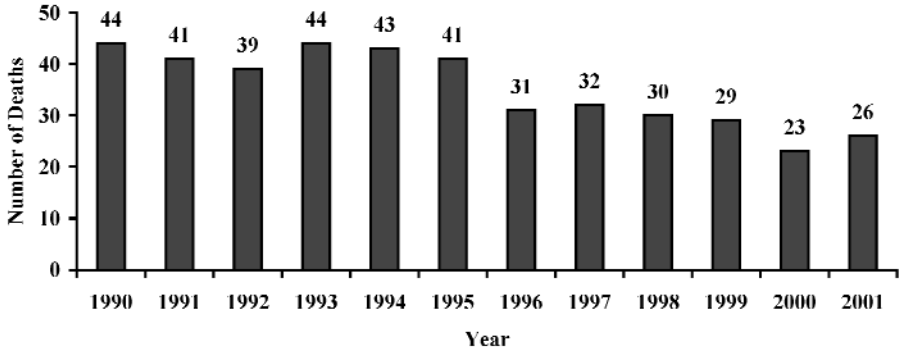


Figure 65
Michigan Child Suicide Rates Due to Firearms, Ages 0-18, 1990-2001

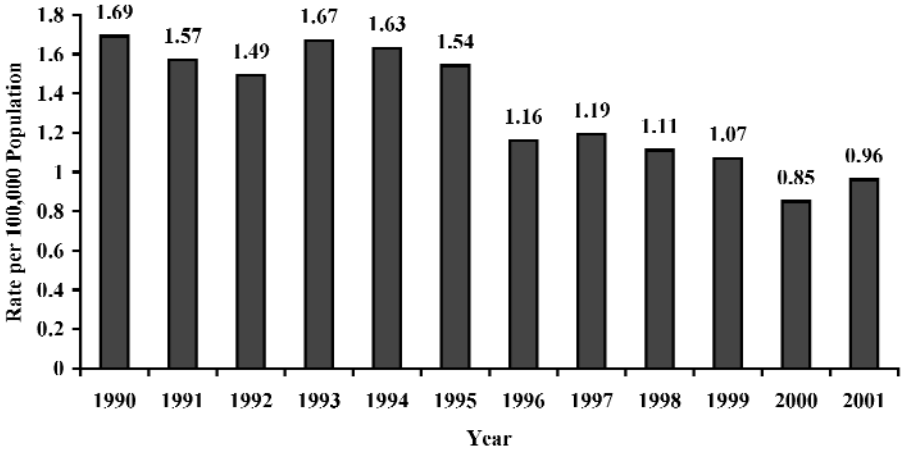


Table 75
Number of Michigan Child Suicides Due to Firearms by Age and Sex, 2001

Age	Sex		
	Male	Female	Total
10-14 Years	2	1	3
15-18 Years	22	1	23
Total	**24**	**2**	**26**

Table 76
Number of Michigan Child Suicides Due to Firearms by Race and Sex, 2001

Race	Sex		
	Male	Female	Total
White	23	2	25
Black	0	0	0
Other	1	0	1
Total	**24**	**2**	**26**

Figure 66
Michigan Child Suicides Due to Suffocation and Strangulation, Ages 0-18, 1990-2001

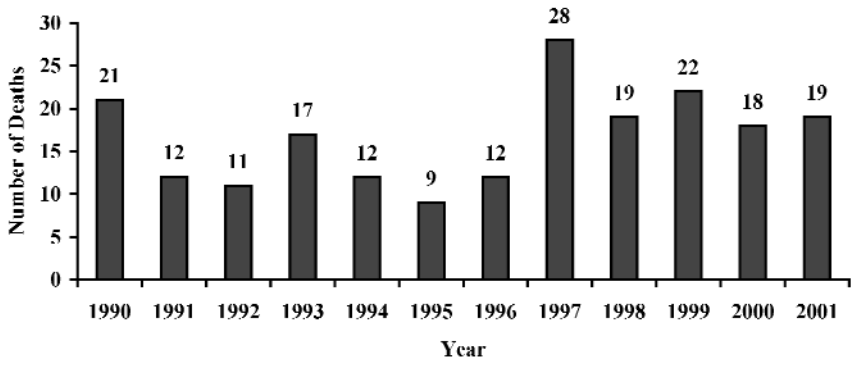


Figure 67
Michigan Child Suicide Rates Due to Suffocation and Strangulation, Ages 0-18, 1990-2001

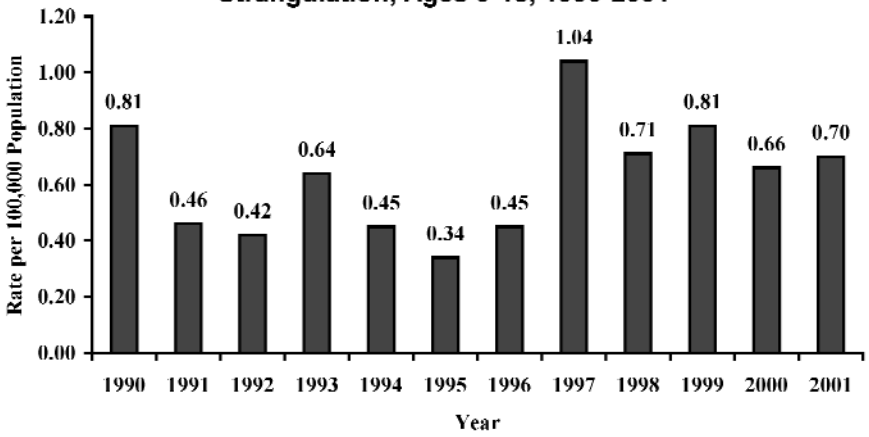


Table 77
Number of Michigan Child Suicides Due to Suffocation and Strangulation by Age and Sex, 2001

Age	Sex		
	Male	Female	Total
10-14 Years	2	3	5
15-18 Years	8	6	14
Total	**10**	**9**	**19**

Table 78
Number Michigan Child Suicides Due to Suffocation and Strangulation By Race and Sex, 2001

Race	Sex		
	Male	Female	Total
White	8	6	14
Black	2	1	3
Other	0	2	2
Total	**10**	**9**	**19**

Suicide by other causes includes poisonings, motor vehicle crashes and falls. In 2001, all four children used poisoning as the "other" suicide method.

Figure 68
Michigan Child Suicides Due to Other Causes, Ages 0-18, 1990-2001

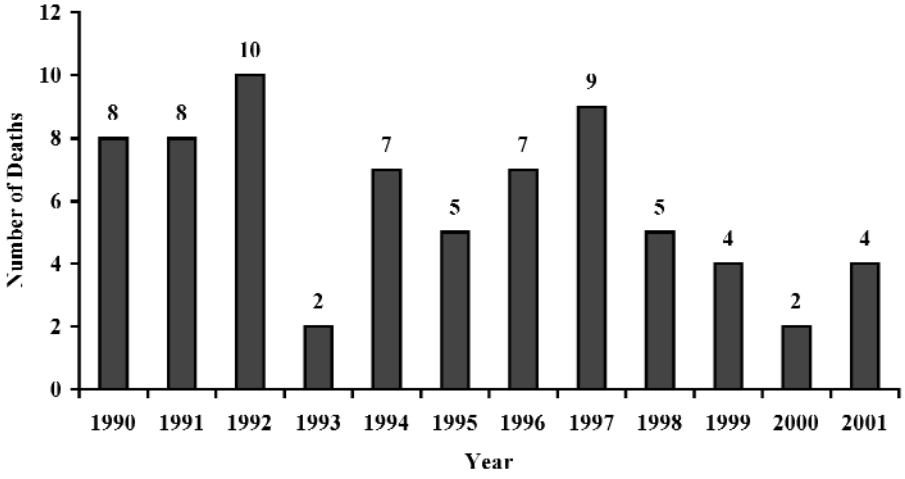


Figure 69
Michigan Child Suicide Rates Due to Other Causes, Ages 0-18, 1990-2001

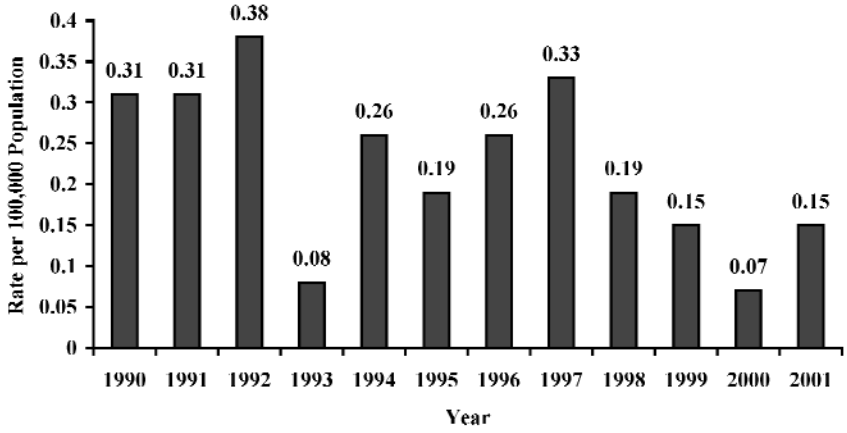


Table 79
Michigan Child Suicides Due to Other Causes by Age and Sex, 2001

Age	Sex		
	Male	Female	Total
10-14 Years	0	1	1
15-18 Years	3	0	3
Total	**3**	**1**	**4**

Table 80
Michigan Child Suicides Due to Other Causes by Race and Sex, 2001

Race	Sex		
	Male	Female	Total
White	3	1	4
Black	0	0	0
Other	0	0	0
Total	**3**	**1**	**4**

Child Death Review Team Findings from CDR Case Reports

Local teams reviewed 44 in 2001. Thirty-eight of the victims were white, three were black, one was multi-racial, one was Asian and the race of one child was unknown. Thirty-three of the victims were male and 11 were female. However, males completed 91% of the firearm suicides and females accounted for 47% of the hangings.

Eighty-six percent of the suicides reviewed were to white victims.

Although most suicides were to older teenagers, there were also 12 deaths between the ages of 10-14.

Table 81
Number and Percent of Child Suicides Reviewed by Age, 2001

Age	Number	Percent
10-14 Years	12	27
15-18 Years	29	65
19 Years	3	6
Total	**44**	**100**

The method of suicide included 23 by firearms, 17 by hanging, two poisonings, one motor vehicle and one by a train. The majority of the suicides, 61%, took place in the teens' homes. Two hangings occurred in jail and one in a hospital. One teen crashed their car and one teen stood in the path of a train.

Alcohol was a factor in four deaths and drugs were a factor in six deaths.

Thirty-eight percent of the teens had made prior verbal threats to kill themselves, and three had made prior suicide attempts. Nine of the teens had been known to have mental health problems at the time of their deaths; eight were receiving mental health services.

Thirty-eight percent of the teens had made prior verbal threats to kill themselves.

Teams reported that 40% of the deaths were completely unexpected. Sixty-three percent of the teens had experienced a significant crisis prior to their suicides. These included arguments with family or friends, break-ups with boyfriends or girlfriends, recent arrests, being caught with drugs or alcohol, parent divorce, school problems and teasing at school. One death was believed to be part of a cluster of suicides.

The teams felt that only 60% of the deaths were preventable. In the other 40%, teams either felt that the suicide was so unexpected with no warning signs to have prevented it, or that the teens were so determined to complete the act of suicide that no intervention could have prevented the death.

The teams also identified risk factors related to the type of method used to complete the suicide. These include:

Firearm Suicides

The type of weapon used most often was a rifle, which was used in nine of the 23 cases reviewed. Six of the firearms were stored in a locked cabinet and 13 were not. In four cases, the team did not know how the weapon was stored. Only one of the 23 weapons was known to have had a trigger lock. Thirteen of the guns used were known not to have had trigger locks. In nine cases, the team did not know if there was a trigger lock.

Table 82
Number and Percent of Child Suicides Due to Firearms Reviewed by Type of Weapon, 2001

Weapon	Number	Percent
Rifle	9	39.1
Shotgun	6	26.1
Handgun	5	21.7
No Answer	3	13.0
Total	**23**	**100.0**

Suffocation and Strangulation
For the hanging deaths, the methods used included:

Table 83
Number of Child Suicides Due to Suffocation and Strangulation Reviewed by Type, 2001

Suffocation Type	Number
Rope or String	13
Bedding	2
Heavy Object	1
No answer	1
Total	**17**

Other Methods
In 2001, CDR teams reviewed four cases due to other methods of suicide. Two of the cases were poisonings and one was a motor vehicle crash. In one case, the victim stepped out in front of an oncoming train.

Local Initiatives to Prevent Child Deaths

Local teams proposed 27 suicide prevention initiatives in 2001. They include:

- Training on the Yellow Ribbon Suicide Prevention program.
- Mentoring aid in schools.
- Grief counseling.
- Formation of a suicide prevention group in the county.
- Discussion with the school curriculum director to implement the Yellow Ribbon Suicide Prevention Program.
- Town meeting held regarding crime and alcohol use by minors and support of ongoing suicide task force education in various schools.
- Creation of a suicide subcommittee.

Recommendations for Policymakers Regarding Child Suicides

1. The Michigan Surgeon General should lead the effort to develop an Adolescent Suicide Prevention and Services strategic plan in accordance with the U.S. Surgeon General's *Call to Action for Suicide Prevention.*
2. The Michigan Department of Community Health should conduct a statewide assessment of the capacity of children's mental health services to adequately assess and provide treatment to adolescents who exhibit signs of depression.

Recommendations for Parents and Caregivers

- If you notice a change in your child's behavior or habits, talk to them about it immediately and do not be afraid to seek professional help.
- If your child seems depressed, highly anxious or has made suicide threats, seek help from a professional and make sure your child cannot gain access to weapons or other means of suicide in your home.
- Take all suicide threats seriously.


Keeping
Kids
Alive©

Section Seven:
Undetermined

Overview of Undetermined Child Deaths, Ages 0-18

Overview of Undetermined Child Deaths, Ages 0-18

Michigan Mortality Data from Death Certificates

In 2001, 11 Michigan children died of undetermined manner.

Figure 70
Michigan Undetermined Child Deaths, Ages 0-18, 1990-2001

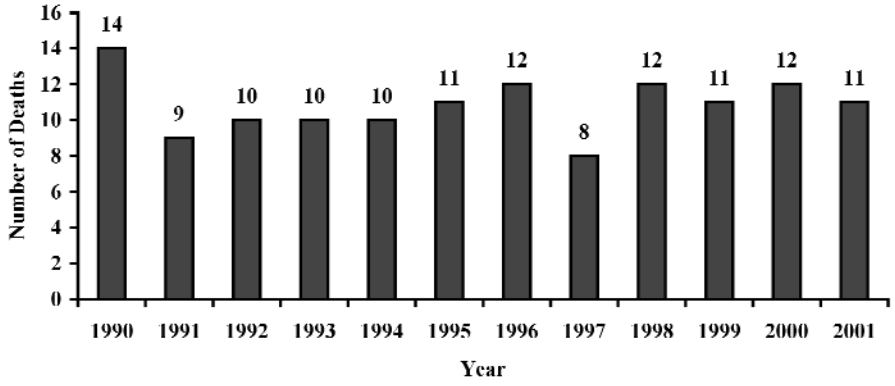


Figure 71
Michigan Undetermined Child Death Rates, Ages 0-18, 1990-2001

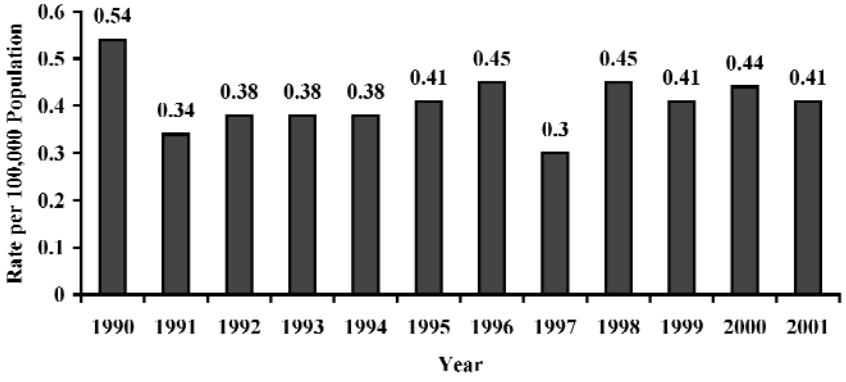


Table 84
Number of Michigan Child Deaths Due to Undetermined Manner by Age and Sex, 2001

Age	Sex		
	Male	Female	Total
Under One Year	3	2	5
1-4 Years	1	0	1
5-9 Years	1	0	1
10-14 Years	2	0	2
15-18 Years	2	0	2
Total	**9**	**2**	**11**

Table 85
Number of Michigan Child Deaths Due to Undetermined Manner by Race and Sex, Ages 0-18, 2001

Race	Sex		
	Male	Female	Total
White	7	0	7
Black	2	1	3
Other	0	1	1
Total	**9**	**2**	**11**

Table 86
Michigan Undetermined Child Deaths by Cause, Ages 0-18, 2001

Cause	Number	Percent
Suffocation and Strangulation	5	45.5
Drowning	2	18.2
Firearm and Weapon	1	9.1
Poisoning	1	9.1
Other Undetermined Causes	2	18.2
Total	**11**	**100.0**

Child Death Review Team Findings from CDR Case Reports

Local teams reviewed 37 child deaths of undetermined manner in 2001. Sixteen of the children were female and 21 were male. Twenty-three of the children were white, 13 were black and one was multi-racial. Of the 37 cases reviewed in 2001, one child died in 1999, six children died in 2000 and 30 children died in 2001. The child mortality data from the Michigan Department of Community Health only lists 11 child deaths under the manner of undetermined for 2001. Many of the undetermined manner cases that were reviewed by CDR teams in 2001 did not have a corresponding death certificate in the Michigan Resident Death File that is provided to the state CDR program by MDCH.

Table 87
Undetermined Child Deaths Reviewed by Age, 2001

Age	Number	Percent
Under One Year	30	81.1
1-4 Years	5	13.5
5-9 Years	0	0.0
10-14 Years	2	5.4
15-18 Years	0	0.0
Total	**37**	**100.0**

Table 88
Undetermined Child Deaths Reviewed by Cause, Ages 0-18, 2001

Cause	Number
Undetermined	24
Suffocation and Strangulation	5
Natural (Under One Year)	4
Firearm and Weapon	1
Drowning	1
Poisoning	1
Falls	1
Total	**37**

Twenty-nine deaths of undetermined manner were related to unsafe sleeping environments, including 24 due to undetermined cause and five due to suffocation.

- A two-month-old was sleeping in a bed with her teenaged mother. The baby had been propped up in the bed with pillows.
- A four-month-old was sleeping on a couch with her father (reviewed by two county teams).
- A two-month-old was found on her stomach, face down in a bed with her mother.
- An eight-month-old was sleeping in a playpen on his stomach.
- A five-month-old was sleeping between two adults.
- A ten-day-old was sleeping on its side in a drawer.
- A one-month-old was sleeping between his parents in their bed.
- Mom fell asleep on the couch holding her 18-month-old on her chest.
- A three-month-old was wrapped in a quilt and placed on a mattress pad on top of a pillow on the couch.
- A four-month-old was found sleeping in bed with her parents.
- A six-week-old was sleeping with mom on the couch.
- A 20-day-old infant was sleeping on the couch with her obese mother. Mom had her arm over the baby's chest.
- A one-month-old was sleeping between her parents in their bed.
- A five-month-old was sleeping in a king size bed with her mother, father and two siblings.
- A one-month-old was sleeping with two adults in their bed.
- An eight-month-old infant was sharing a sleeping bag with his father.
- A nine-month-old infant was found wedged between a mattress and a headboard.
- A three-month-old infant was in his car seat and was covered by a blanket.
- A three-month-old was sharing a crib with her twin. She was placed on her stomach with a comforter over her and two thick blankets.
- A two-month-old infant was found dead in bed with her mother and mother's boyfriend. Both adults were intoxicated.

Twenty-nine deaths of undetermined manner were related to unsafe sleeping environments.

In three of the 29 sleep-related cases reviewed, CDR teams found that child abuse and neglect was involved. In one case, the father admitted to the abuse and was charged criminally.

Four of the 37 deaths of undetermined manners were listed as natural causes to infants less than one year of age.

- A two-month-old died due to acute tracheobronchitis and bronchiolitis and had been exposed to drugs prior to birth.
- A 14-day-old died due to prematurity and had been born to a drug-addicted mother.

- In one case, the CDR team did not have any information from the hospital where the infant died.
- A six-month-old died due to anoxic encephalopathy and acute pneumonia. Children's Protective Services substantiated medical neglect.

The four remaining child deaths of undetermined manner included a shooting, a drowning, an alcohol poisoning and a child who died of head injuries.

Overall, CDR teams found that 21 of the 37 child deaths due to undetermined manner were preventable.

Local Initiatives to Prevent Child Deaths

Local teams proposed 13 undetermined manner prevention initiatives in 2001. Examples of the initiatives include:

- Due to an infant death and lack of scene protocol being followed – the prosecutor's office met with law enforcement heads and reinforced the need to conduct a death scene investigation immediately, following the State of Michigan death scene investigation protocol.
- An article was printed in the local paper warning of the dangers of using drugs and alcohol during pregnancy.
- Local media printed the safe sleep message.
- Provided safety awareness education to agencies and the public who care for children, including child care centers, camps and community education programs.

Recommendations for Policymakers Regarding Child Deaths of Undetermined Manner

(Note: some of these recommendations are the same as those in the SIDS and Accidental Suffocation and Strangulation sections.)

1. In every county, the prosecuting attorney, law enforcement agencies, medical examiner and the Family Independence Agency should jointly adopt and implement a child death scene investigation protocol using the *State of Michigan Protocols to Determine Cause and Manner of Sudden and Unexplained Child Deaths* as a model.
2. The Michigan Department of Community Health and the Family Independence Agency should collaborate to implement a statewide campaign that promotes safe infant sleep environments and explicitly describes the dangers posed to infants in bed-sharing and other unsafe sleep environments.

Section Eight:

Fetal and Infant Mortality Review (FIMR)

Overview of Michigan Fetal and Infant Mortality Review

Overview of Infant Mortality, Ages 0-1

Background

FIMR Outcomes

Stratgegies to Implement Local FIMR Recommendations

Overview of Michigan Fetal and Infant Mortality Review

Michigan FIMR is a good example of individual communities, university and government working together.

Program Description and History

The goal of Fetal and Infant Mortality Review (FIMR) is to enhance the health and well-being of women, infants and families by improving community resources and service delivery systems available to them. Michigan FIMR is a good example of individual communities, university and government working together to improve the perinatal system, and ultimately to reduce the number of infant deaths.

Both Saginaw and Battle Creek, Michigan, began local FIMR projects in the 1980s and early 1990s, respectively. Both communities formed coalitions to study the problem of infant mortality and began a FIMR process to help understand how and why infants were dying. Battle Creek was unable to continue the process when funding from a federal grant ended. Saginaw, however, found other funding that allowed the FIMR to continue without interruption. This project is one of the oldest in the country and continues as a model for newly developing local teams in Michigan.

A project to study infant deaths in Detroit using the FIMR approach was approved in 1991 as part of the Detroit Healthy Start. Detroit became a demonstration project for inner-city infant mortality reduction strategies. A comprehensive summary of cases was produced and presented locally, state-wide and nationally. This FIMR project ended in 1997, however, the City of Detroit resumed FIMR reviews in 2001.

The Michigan Department of Community Health, using Title V funds, supported these projects with technical assistance, and statistical and epidemiological information. The value of this surveillance and review was recognized, and provided the background for establishing statewide support for local FIMR teams. The three original FIMR projects also demonstrated the interaction needed between FIMR and other Maternal and Child Health programs designed to lower infant mortality.

Above all, the development of state support for local FIMR teams was designed to help improve the outcome of births in Michigan. Having experienced a decline in infant mortality much slower than that for other areas across the nation, Michigan was determined to improve this picture. The current Title V Needs Assessment and five year plan includes information gained from local FIMR findings and calls for continuation of this process. Communities with infant mortality rates above the state average and those communities with a significant racial or ethnic disparity in infant mortality are targeted to improve the identification of local issues affecting poor birth outcomes.

The FIMR Process

The FIMR process entails four intertwined components: 1) data gathering, 2) case review, 3) community action, and 4) changes in community systems. Currently, only infant deaths are reviewed in order to identify associated factors, determine if these factors represent system problems, develop recommendations for change and assist in the implementation of change. As local teams are able, fetal deaths will be included to learn more about factors earlier in pregnancy that may lead to fetal demise. FIMR teams examine the significant social, economic, cultural, safety and health system factors associated with fetal and infant mortality through a case study approach. Deaths are identified through a local process, typically with notification of the local health department. Death certificates are matched with birth certificates and autopsy reports if available. Medical records are reviewed according to a protocol. Finally, the parent(s) are contacted and a family interview is done to round out the information available and a de-identified case summary is produced for team review.

FIMR teams examine the significant social, economic, cultural, safety and health system factors associated with the deaths.

Data Gathering

Data are collected from a variety of sources including: maternal history; labor and delivery records; infant pre/post discharge records; home and environmental records; prenatal visit records; maternal hospitalization record; well and sick baby visits; infant emergency department and hospital re-admissions; WIC and other social services; and interview with the family, particularly the mother.

Case Review

The Community Review Teams (CRT) are multi-disciplinary, including representation from the medical and health provider community, public health, human service agencies, law enforcement, key community leaders, consumer and advocacy groups, and in some teams, parents who have lost a child. Teams examine each fetal and infant death asking questions such as:

- Did the family receive the services or community resources they needed?
- Are there gaps in the systems?
- Can this case tell us about how families can use the existing local resources?
- What are the barriers to care and trends in service delivery?
- What can be done to improve policies that affect families?

The Value of Case Review

The FIMR process:

- Gives mothers and families a voice in the process of service and resource improvement through incorporation of a Maternal Home Interview into the review process;
- Brings a multi-disciplinary, community team together to review confidential, de-identified deaths of infants under one year of age; to identify issues and make recommendations for community change;
- Uses a Community Action Team (CAT) of leaders representing government, consumers, key institutions, health and human service organizations that take recommendations to action. The action teams track progress on recommendations, prioritizes identified issues, designs and implements interventions that may improve outcomes for future families; and
- Is a blend of public health surveillance activity, population-based research, and continuous quality improvement as well as a basis for policy development.

The role of the CAT is to translate Case Review Team recommendations into action.

Community Action

Recommendations from the CRT are presented to a team of individuals referred to as the Community Action Team. The CAT is composed of two types of members: 1) individuals with the political will and fiscal resources to create large-scale system change, and 2) individuals who can define a community perspective on how best to create the desired change in the community. The role of the CAT is to translate case review team recommendations into action, and participate in implementing interventions designed to address identified problems.

Changes in Community Systems

The continuous nature of the FIMR process provides a built-in feedback mechanism that helps to assess whether or not policy recommendations and actions are implemented. Changes, or lack thereof, in the community service systems and resources for women, children and families will be evident in new case reviews. Additionally, mechanisms to inform the CRT and CAT about the progress of interventions are developed.

Team Coordination

To insure the success of a local FIMR, a dedicated team coordinator takes responsibility for the management of the activities of the program. The coordinator may supervise FIMR staff members (including home interview staff), abstract vital statistics and medical records, develop case summaries, facilitate team meetings and serve as program liaison to other community agencies involved in the review or action team process. The team coordinator also develops written recommendations based on the review findings and ensures that they are regularly brought to the CAT for deliberation and prioritization.

FIMR teams usually review cases six to eight months after the death since it takes about three months of field work to have cases ready to review. Local teams determine the number of cases and the types of cases to be reviewed. Teams use analysis of community priorities as criteria for the causes of death to be reviewed. Most FIMR review teams meet once a month and review two or three cases.

Participating Communities

Saginaw County - Lead Agency: Saginaw County Department of Public Health
Tuscola County -Cooperative agreement with Saginaw's FIMR
Kalamazoo County - Lead Agency: Kalamazoo Human Services Department
Genesee County - Lead Agency: Genesee County Health Department
Oakland County - Lead Agency: Oakland County Health Division
Calhoun County - Lead Agency: Calhoun County Health Department

New FIMR Teams in 2001

Kent County - Lead Agency: Spectrum Health
Detroit - Lead Agency: City of Detroit Health Department
Branch County - Lead Agencies: Partnership between Family Services Network (Branch's Multi-Purpose Collaborative Body) and Branch-Hillsdale-St. Joseph Community Health Agency

Teams in Formation (Expecting Start-up in 2002/2003)

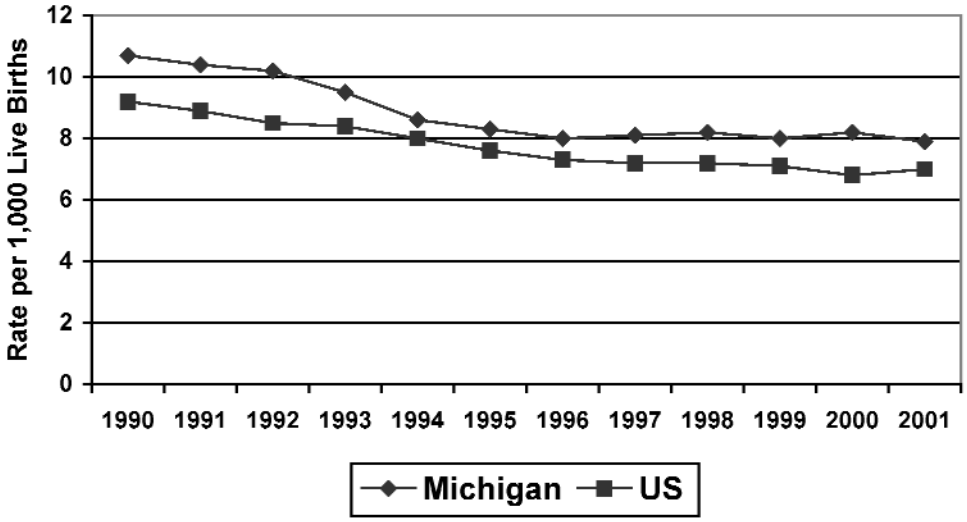
Jackson County
Washtenaw County
Berrien County
Lapeer County
Inter-tribal Council
Ingham County
Muskegon County

Overview of Infant Mortality, Ages 0-1

Michigan Mortality Data from Death Certificates

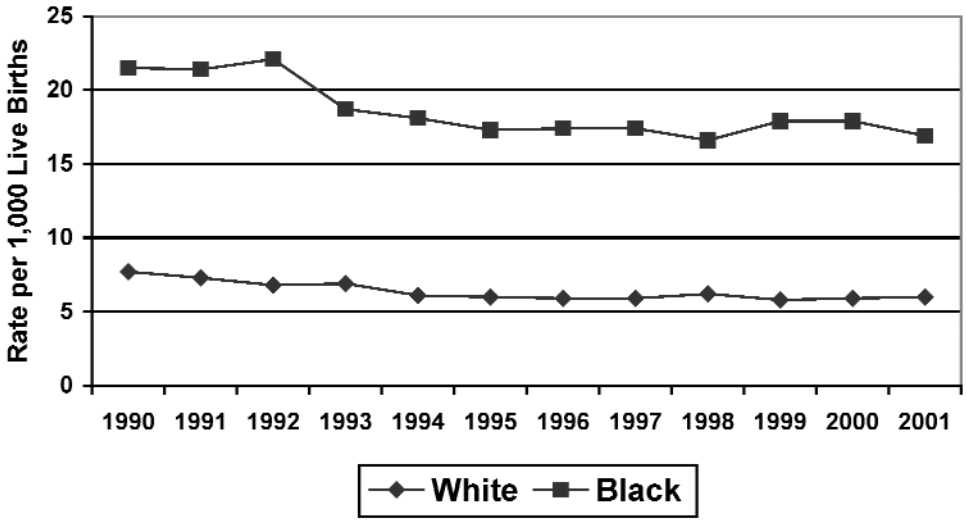
Infant mortality rates in Michigan have remained consistently higher than United States rates since 1990. Michigan ranked 39th out of the 50 states by infant mortality rate at the last determination (1998-99 data).

Figure 72
Infant Mortality Rates, Michigan vs. US, 1990-2001



Reduction of infant mortality is a health priority for the State of Michigan. Those committed to improving the outcome for infants in Michigan recognize a complex and variable configuration of risk. Racial, ethnic and geographic disparities have characterized the problem for many years, but no approaches or tools have emerged to eliminate all preventable infant deaths. Perinatal technology has improved the survival of those born too small and too soon, thus producing significant reduction in deaths through in-hospital neonatal intensive care. Community approaches are needed, however, to impact the rate of death for those who survive the neonatal period and to improve the health of mothers.

Figure 73
Michigan Infant Mortality Rates by Race, 1990-2001



Infant mortality reduction is largely focused on addressing what are considered risk factors for early childhood death. Thus annual analysis of causes of death, racial differences and the correlation between pregnancy events and birth outcomes in infant deaths are important for targeting strategies.

Black infant mortality rates continue to be almost three times higher than white rates.

The racial disparity in infant mortality is one of the most significant issues under study. Black rates continue to be almost three times higher than white rates. High rates of premature births (less than 37 weeks gestation), low birth weight (less than 2,500 grams) and late entry or no prenatal care are also disproportionately greater among African Americans.

The Perinatal Periods of Risk (PPOR) model for interpreting infant mortality data has been used to focus study and prioritize prevention efforts. Michigan is most vulnerable in the Maternal Health/Prematurity period. Sixty-eight percent of infant deaths occur in the first 28 days of life, indicating a need to improve preconception health, unintended pregnancy rates, smoking cessation, drug abuse rates and specialized perinatal care. The next greatest period of risk is Infant Health, which indicates a need to improve safe sleep environments for infants, breastfeeding promotion and injury prevention.

Background

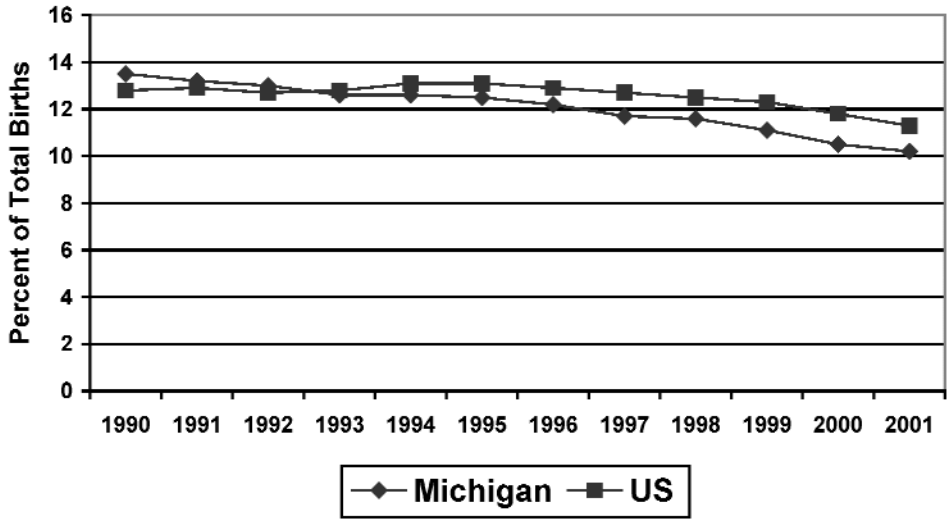
Michigan Demographics

Michigan's live birth rate has leveled off since 1996 at approximately 133,000 births, after significant declines in births since 1990. Overall, the total births declined 13% from 1990 to 2001. Births to white mothers declined 12% in the same period and births to black mothers declined 26%.

Sixty-eight percent of infant deaths occur in the first 28 days of life.

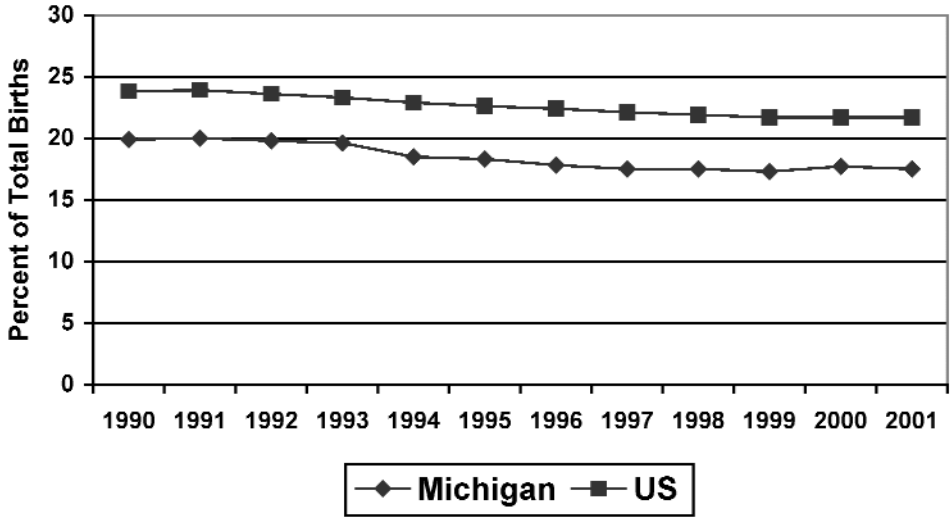
Infant mortality is linked to characteristics of the mother, such as race, age, marital status, education, type of insurance, prenatal care and smoking.

Figure 74
Percent of Total Births to Teens, Michigan vs. US, 1990-2001*



* From KIDS COUNT – Right Start Online

Figure 75
Percent of Total Births to Mothers with Less Than 12 Years of Education, Michigan vs. US, 1990-2001*



* From KIDS COUNT – Right Start Online

FIMR Outcomes

The following section will summarize Michigan infant deaths and the findings of the local FIMR teams in the hope that recommendations and initiatives that have been successful in these nine communities may inspire further efforts in other communities and among our state leaders to improve the lives and the health of Michigan's women, infants and families.

A Summary of Infant Death Data

In Michigan in 2001, 1,053 live-born infants did not survive until their first birthday. Deaths of infants less than one year accounted for 60% of all child deaths in 2001. Prior to 2000, only two sites in Michigan were conducting Fetal and Infant Mortality Reviews. By the end of 2001, eight sites were actively reviewing deaths. Table 89 gives the actual number of infant death cases reviewed by teams over the last four years. Since this is the first time FIMR findings are included in the annual CDR report, this section will be an inclusive analysis of the last four years of data, with the subsequent reports focusing in on the year of review.

Table 89
Number of Michigan FIMR Reviews by Year, 1997-2001*

Year of Review	Number of Cases
1997	23
1998	54
1999	66
2000	104
2001**	27
Unknown	2
Total	**276**

*Review Sites:
1998: Saginaw and Kalamazoo
1999: Saginaw, Kalamazoo, and Genesee
2000: Saginaw & Tuscola, Kalamazoo, Genesee, Calhoun and Pontiac
2001: Saginaw and Tuscola, Kalamazoo Genesee, Calhoun, Pontiac and Southfield, Detroit, Kent and Branch
** Data from 2001 was incomplete at the time of this report.

Infant Deaths Reviewed by Cause

The five leading causes of infant death in the FIMR reviews were low birth weight (LBW) and prematurity, respiratory disease, suffocation/positional asphyxia, congenital anomalies and Sudden Infant Death Syndrome (SIDS). About 88% of the known causes of infant deaths fell into one of these categories. Prematurity deaths accounted for about 49% of those cases.

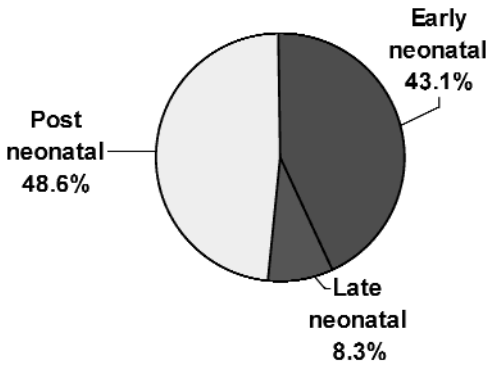
Table 90
Number and Percent of Michigan Infant Deaths Reviewed by Cause, 1997-2001

Cause of Death	Number	Percent
Prematurity/LBW	110	39.9
Respiratory Disease	24	8.7
Suffocation/Positional Asphyxia	23	8.3
Congenital Anomalies	22	8.0
SIDS	20	7.2
Other	26	9.4
Unknown/No answer	51	18.5
Total	**276**	**100.0**

Age at Death

Fifty-one percent of the cases reviewed by local FIMR teams were neonatal deaths (i.e., infants did not survive the first 28 days of life) and 43% were early neonatal deaths (i.e., infants did not survive the first week of life).

Figure 76
Percent of Michigan Infant Deaths Reviewed by Age, 1997-2001



Birthweight

Fifty-two percent of the cases reviewed by local FIMR teams were born very small. They weighed less than one pound 10.5 ounces (750 grams). About 75% of all the cases reviewed were infants with low birth weights (under five pounds eight ounces or 2,500 grams.

Table 91
Percent of Michigan Infant Deaths
Reviewed by Birth Weight in Grams, 1997-2001

Birthweight	Number	Percent
Under 750 grams	144	52.2
750 to 1499 grams	28	10.1
1500 to 2,499	35	12.7
Over 2,500 grams	68	24.6
Unknown	1	0.4
Total	**276**	**100.0**

Period of Gestation

Table 92
Percent of Michigan Infant Deaths
Reviewed by Gestational Age, 1997-2001

Gestational Age	Number	Percent
Under 24 weeks	73	26.4
24 to 31 weeks	55	19.9
32 to 37 weeks	35	12.7
Over 37 weeks	66	23.9
Unknown	47	17.1
Total	**276**	**100.0**

Over 26% percent of cases reviewed are infants of less than 24 weeks gestation.

Statewide, low birth weight and prematurity (under 38 weeks) combined is the leading cause of death for black infants.

Race

While black infant births made up about 18% of all Michigan live births in 2001, black infant deaths made up nearly 40% of all Michigan infant deaths. The Michigan white infant mortality rate closely resembles the white infant mortality rate for the U.S. In 2001, Michigan's white infant mortality rate was 6.0 deaths/1,000 live births, compared to the U.S. white infant mortality rate of 5.7 deaths/1,000 live births. However, the black infant mortality rate for Michigan remained significantly higher than the black infant mortality rate for the U.S., 16.9 deaths/1,000 live births compared to 14.0 deaths/1,000 live births in the year 2001. Michigan consistently shows an average ratio of 3:1 for black infant deaths over white infant deaths.

Table 93
Percent of Michigan Infant Deaths Reviewed
by Race of Mother, 1997-2001

Race of Mother	Number	Percent
White	103	37.3
Black	109	39.5
Other	16	5.8
Unknown	48	17.4
Total	**276**	**100.0**

Prenatal Care

Risk factors and trends begin to emerge after case reviews, helping local communities plan initiatives to bridge the gaps in care and improve the resources available for women and babies in their individual communities. Reviews of the deaths due to prematurity revealed that only one out of two moms whose infants died had adequate prenatal care, and 34% entered care after the first 12 weeks of pregnancy.

Table 94
Percent of Michigan Infant Deaths Reviewed by Adequacy of Prenatal Care, 1997-2001

Kessner's Index	Number	Percent
Adequate	66	23.9
Intermediate	35	12.7
Inadequate	30	10.9
Unknown	145	52.5
Total	**276**	**100.0**

Table 95
Percent of Michigan Infant Deaths Reviewed by Entry into Prenatal Care, 1997-2001

Entry into Care	Number	Percent
Before 12 weeks gestation	111	40.2
After 12 weeks gestation	96	34.8
Unknown	69	25.0
Total	**276**	**100.0**

Pregnancy Intendedness

In Michigan, 71% of all births are unplanned or unintended, and approximately 60% of Medicaid births are unplanned.* Women who have unwanted or unplanned pregnancies are more likely to be poorly committed to the outcome, and less likely to seek adequate prenatal care and change behavior related to substance use and abuse.

Table 96
Percent of Michigan Pregnancy Intendedness, 1997-2001

Intendedness	Number	Percent
Planned pregnancy	20	7.2
Unplanned pregnancy	196	71.0
Unknown	60	21.7
Total	**276**	**100.0**

*MI PRAMS data report, 2000

Prematurity and Infections

Conditions which are known to pre-dispose a woman to preterm labor are infections such as sexually transmitted diseases and other events that may weaken the cervix, such as previous elective abortion, spontaneous miscarriage, previous infant loss or stillbirth. In the cases of premature infants reviewed by FIMR teams, nearly two-thirds of the women had had either a previous voluntary interruption of pregnancy (VIP) or a spontaneous miscarriage/abortion (SAB). Infections, including Sexually Transmitted Infections (STI's) were present in 57% of the women who lost infants to prematurity. Previous loss of either a live born or stillborn infant affected 16% of the women whose babies died due to prematurity.

Michigan statistics reveal that about 35% of all premature infants had moms who smoked tobacco while pregnant.

Table 97
Percent Michigan Premature Infant Deaths Reviewed by Conditions Affecting the Cervix, 1997-2001 (n=110)

Condition	Number	Percent
Previous VIP/SAB	51	46.4
Previous infant/fetal loss	17	15.5
Infections/STI's	63	57.3

Prematurity and Substance Exposure in Pregnancy

Michigan statistics reveal that about 35% of all premature infants had moms who smoked tobacco while pregnant. Over the last 10 years, approximately 1.4% of women report drinking alcohol while pregnant, and 0.8% admit to using illicit drugs at some time during their pregnancy. These numbers are thought to be extremely underreported, as they are taken from birth certificates, which are "self reported" information in Michigan. FIMRs are able to look at the substance use and abuse issue with greater accuracy, combining medical chart abstraction with confidential home interview information.

Table 98
Percent of Michigan Premature Infant Deaths Reviewed by Substance Use by Mom, 1997-2001 (n=110)

Substance Use	Number	Percent
Smoked during pregnancy	38	34.5
Drank alcohol while pregnant	15	13.6
Used drugs while pregnant	19	17.3

Prematurity and Social Factors

Poverty, stress and lack of social support have been emerging as factors in the literature that may play a role in predisposition to pre-term labor, especially for black women. Forty-three percent of prematurity deaths reviewed by FIMR teams were identified as having multiple stressors or "social chaos" present in the lives of the moms. About 66% of the cases reviewed had moms with private insurance, the majority being on Medicaid. Slightly more than one-third of the moms had inadequate social support, from either partner or family.

Table 99
Percent of Michigan Premature Infant Deaths Reviewed by Psychosocial Risk Factors for Prematurity, 1997-2001 (n=110)

Maternal Risk Factor for Prematurity	Number	Percent
Multiple Stressors	47	42.7
Medicaid or Self Insured	72	65.5
Poor Nutrition	14	12.7
No Social Support	31	28.2
Violence	23	20.9

Areas of Need

The following are findings of local team reviews that enumerate components of maternal health, antenatal care and infant health that affect pregnancy outcomes:

Maternal Health Status

- Substance abuse and chemical addiction is a common finding. Women may avoid prenatal care for fear of having their drug dependency discovered.
- Infections prior to and early in pregnancy are linked with infant deaths.
- Unwanted pregnancies are highly correlated with infant deaths.
- Obesity and poor nutrition are associated with poor outcome.
- Domestic violence and sexual abuse are common occurrences.

Antenatal Care

- Pre-term labor is highly correlated with infant death.
- Many women still enter prenatal care late in the pregnancy or not at all.
- Negative experiences with hospital personnel, including cultural insensitivity, foster feelings of helplessness.

Infant Health Status

- Antepartum care is fragmented and referrals are often not completed.
- Congenital anomalies lack follow-up for services and prevention-strategies.
- Accuracy of the cause of death hampers prevention strategies.
- Lack of grief support impairs readiness for subsequent pregnancies and increases the family stress.
- Infants sleeping with adults in beds, couches, etc. is linked with an increasing incidence of accidental suffocation or strangulation.
- Inadequate housing, overcrowding, high stress living conditions, violence in the neighborhood and lead contaminated housing are common findings.

Recommendations for Policymakers Regarding Infant Deaths

1. Improve the funding of local Fetal and Infant Mortality Review to target communities with the highest infant death rates and greatest racial disparities.
2. Implement a data collection system statewide for Maternal Support Services/Infant Support Services, including consistent assessment of client needs and services provided.
3. Evaluate the Medicaid data to determine how infant mortality is impacted by barriers to access such as Medicaid reimbursement policies, transportation reimbursement and provider resources/availability.
4. Collect data on maternal morbidity and the effect on prematurity, low birth weight and infant mortality such as the impact of stress and abuse of women of childbearing age and their families.
5. Initiate surveillance data analysis of fetal deaths to improve knowledge of early pregnancy loss.
6. Support WIC co-location and case management as a means to improve early access to prenatal care.
7. Raise the awareness of health care providers that all pregnant women should be assessed for substance abuse and domestic violence and treatment programs made available.
8. Improve access to family planning resources to reduce the number of unintended and unwanted pregnancies.
9. Initiate pre-pregnancy (preconceptional) care funding to reduce maternal health problems prior to pregnancy.

Recommendations for Parents and Caregivers

- Be aware of the importance of planning pregnancy and optimal spacing.
- Understand the importance of nutrition and folic acid supplements.
- Recognize the role of stress and abuse on pregnancy outcome.
- If you are pregnant, or ***think*** you may be pregnant, see your health care provider early and often, and follow their advice.
- Avoid alcohol, tobacco and drugs during pregnancy and in the three months before pregnancy.
- If you experience any warning signs for pre-term labor, call your health care provider right away.
- Provide a safe crib for infants to sleep in and avoid bed sharing.
- Breastfeed infants to provide the best nutrition and bonding experience.
- Value the support of the whole community to care for mothers, pregnant women and families.

Strategies to Implement Local FIMR Recommendations

Oakland County's FIMR team has partnered with the faith–based community and published church bulletin inserts called "Save our Babies, Save Our Heritage" and pamphlets aimed specifically at helping black women understand the warning signs for pre-term labor and other pregnancy complications. A "Think Ahead" component gives women easy steps to follow before they become pregnant to increase the chances of a healthy outcome and reduce risks for infant mortality.

Saginaw, along with other FIMR communities, has recognized the value of community health workers or para-professionals working with pregnant moms to reduce the stress in their lives and link them to essential community resources for food, housing, transportation and child care. Because of their FIMR findings, Saginaw has increased their number of Maternal Infant Health Advocacy Services (MIHAS) workers from two to six, using federal grant monies from their Healthy Start allocation to insure that the most underserved women have an advocate working with them throughout their pregnancy, and up to infant's second birthday.

Another example of taking FIMR recommendations to action is the Saginaw domestic violence assessment initiative. Repeated death reviews showed that violence and physical abuse were factors in over 60% of the women who had experienced an infant loss. A pilot program was launched to detect abuse in pregnancy in three of the high-risk clinics providing prenatal care in the community. Now, because of FIMR efforts, assessment for abuse is a standard of care for any woman seeking prenatal care in these clinics.

Genesee and Kent Counties have both used their FIMR findings regarding substance use to drive new initiatives in prenatal risk assessment. In-depth screening tools have been developed and piloted in prenatal care provider sites, resulting in much better identification of women at risk due to psychosocial issues and substance use, with resources put into place for referrals to gender specific treatment programs for women.

In response to their FIMR findings on unplanned pregnancy, the Genesee County Health Department targeted places where women in their county went for pregnancy testing for an intense and creative system of education. Four "kits" were assembled with information on contraception, pregnancy prevention information, preconception care and resources for early prenatal care. Women who tested negative, and reported that they *did not* want to be pregnant, received the kits with information on pregnancy prevention and contraception. Women who tested negative but *did* want to be pregnant received the kit filled with preconception information, samples of prenatal vitamins and resources for substance avoidance, smoking cessation, etc. Women with positive pregnancy tests, reporting both wanted and unwanted pregnancies, received kits with sample prenatal vitamins, information on where to go for prenatal care, and were enrolled into an aggressive follow-up program.

Kalamazoo's Community Action Team has launched a community-wide campaign called "Early and Often," encouraging moms to get into prenatal care as soon as possible, and see their provider often. They have also focused attention on educating women on the signs and symptoms of pre-term labor. Refrigerator magnets distributed to pregnant moms and added labels on prenatal vitamins are two ways they have increased public awareness and gotten prevention messages out. Sixteen fewer babies died in Kalamazoo in 1999 than the year before. Their infant mortality rate declined from 9.7 deaths/1,000 live births in 1998 to 4.8 deaths/1,000 live births in 1999, nearly a 50% reduction.

In their early FIMR days, Saginaw responded by expanding prenatal care to the Federally Qualified Health Center and increasing the number of local providers by expanding the OB/GYN residency program in cooperation with a local clinical campus for the college of human medicine. Saginaw's FIMR team worked with the local department of transportation to change the city bus routes to facilitate women getting to the clinic sites, and added covered bus shelters at several locations. Saginaw's overall infant mortality rate has declined by nearly 50% since the start of FIMR, from 14.7 deaths/1,000 live births in 1992 to 7.2 deaths/1,000 live births in 1999. Rates for 2000 and 2001 have increased slightly to 9.6 and 9.8 deaths/1,000 live births, but significant strides have been in reduction of pre-term and low birth weight births by improving the adequacy of prenatal care.

Multiple FIMR communities have identified the need for safe sleep education, in response to the growing number of accidental suffocation deaths caused by unsafe sleep environment, or overlay by an adult or other person sharing a bed with an infant (see CDR section on Accidental Suffocation).

Saginaw's reviews reveal that suffocation accounts for 12 - 13% of all their infant mortality. In Kalamazoo, suffocation is the fourth leading cause of infant mortality, behind prematurity/LBW, respiratory problems and congenital anomalies. KISS, the Kalamazoo Initiative for Safe Sleep, has hosted community baby showers with education to new and expectant families on Safe Sleep and resources for cribs. KISS partnered with the local hospitals to get the message out early and repeatedly, that infants should sleep alone, in a crib, with no extra blankets, bedding or toys. Saginaw has partnered with the local city police department to store and furnish cribs to families identified in need. The Genesee County FIMR team successfully obtained a grant to purchase and distribute 6,000 infant tee shirts to all new mothers delivering at local hospitals with the message "Face Up to Wake Up."

Detroit has lead the way hosting a community summit on Safe Sleep. They have engaged the media in their community education and awareness campaign with local mothers coming forward to tell their story.

Conclusion

Infant mortality is an important indicator of the health status and well being of citizens of the state of Michigan. Michigan continues to experience high rates of infant mortality compared to the nation. The case findings of local FIMR projects provide valuable insight into individual experiences with systems of care, and factors contributing to infant mortality in Michigan. These findings and the recommendations resulting from them can inform community-based efforts, provider practice, systems reform and policy development.

Three areas of need have been described (Maternal Health, Antenatal Care and Infant Health) and numerous recommendations have been made. The challenge for the state FIMR program is the development of priorities based on objectives for each area of need. Working together as a FIMR Network the local projects will determine which cases still need to be reviewed, and what are manageable outcomes to achieve. Through an informed effort of local teams, community leaders and state support, the delivery of services and systems of care can be changed to meet the goal of improved health for women and infants in Michigan.

Section Nine:

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Appendix B
Number of Cases Reviewed and Reported by County

County Name	Total Number of Deaths in 2001*	Total Number of Reviews Reported in 2001	Total Number of Reviews Reported 1995-2001
Alcona	0	0	1
Alger	2	0	3
Allegan	21	12	36
Alpena	4	0	10
Antrim	3	0	0
Arenac	2	3	3
Baraga	0	0	0
Barry	13	15	38
Bay	21	7	16
Benzie	1	0	0
Berrien	36	38	204
Branch	12	8	23
Calhoun	40	15	138
Cass	4	7	29
Charlevoix	3	0	2
Cheboygan	4	0	4
Chippewa	7	6	15
Clare	1	1	5
Clinton	8	8	25
Crawford	3	9	18
Delta	8	2	7
Dickinson	3	3	3
Eaton	7	9	55
Emmet	2	0	3
Genesee	102	16	57
Gladwin	5	3	16
Gogebic	1	0	0
Grand Traverse	13	0	1
Gratiot	6	7	20
Hillsdale	7	11	17
Houghton	1	0	0
Huron	6	1	13
Ingham	42	23	38
Ionia	16	12	20
Iosco	6	2	6
Isabella	10	12	27
Jackson	32	19	39
Kalamazoo	50	17	81
Kalkaska	1	0	4
Kent	116	44	226
Keweenaw	0	0	0
Lake	0	0	9
Lapeer	12	10	43
Leelanau	0	0	2
Lenawee	13	20	40

Appendix B
Number of Cases Reviewed and Reported by County

County Name	Total Number of Deaths in 2001*	Total Number of Reviews Reported in 2001	Total Number of Reviews Reported 1995-2001
Livingston	15	11	66
Luce	0	5	10
Mackinac	0	0	12
Macomb	101	34	105
Manistee	3	0	5
Marquette	8	3	10
Mason	9	5	16
Mecosta	7	11	50
Menominee	2	3	6
Midland	11	7	19
Missaukee	1	2	5
Monroe	19	19	28
Montcalm	13	12	63
Montmorency	1	0	0
Muskegon	42	16	72
Newaygo	7	8	23
Oakland	150	44	161
Oceana	6	7	26
Ogemaw	2	0	0
Ontonagon	0	0	0
Osceola	6	4	16
Oscoda	1	0	0
Otsego	3	0	10
Ottawa	46	12	67
Presque Isle	4	0	2
Roscommon	3	4	11
Saginaw	38	26	105
Sanilac	8	6	9
Schoolcraft	1	0	0
Shiawassee	15	18	47
St. Clair	27	13	150
St. Joseph	20	15	41
Tuscola	13	5	25
Van Buren	17	10	44
Washtenaw	49	9	50
Wayne	462	198	499
Wexford	5	7	22
Unknown	1		
Michigan	**1760**	**854**	**3072**

* Source: 2001 Michigan Residents Death File, Division for Vital Records and Health Statistics, Office of the State Registrar, Michigan Department of Community Health.

Appendix C
Total Number of Deaths Among Michigan Residents, Ages 0-18, by County of Residence and Age Group, 2001

County of Residence	Age Group by Years					Total
	Under 1	1 - 4	5 - 9	10 - 14	15 - 18	
Alger	0	2	0	0	0	2
Allegan	13	3	1	0	4	21
Alpena	1	1	1	0	1	4
Antrim	2	0	0	0	1	3
Arenac	1	0	0	1	0	2
Barry	3	1	2	1	6	13
Bay	11	2	2	1	5	21
Benzie	0	1	0	0	0	1
Berrien	21	5	3	1	6	36
Branch	8	0	0	0	4	12
Calhoun	26	3	2	3	6	40
Cass	1	1	0	1	1	4
Charlevoix	2	0	0	1	0	3
Cheboygan	3	0	0	0	1	4
Chippewa	1	1	1	3	1	7
Clare	1	0	0	0	0	1
Clinton	5	1	0	1	1	8
Crawford	3	0	0	0	0	3
Delta	6	1	1	0	0	8
Dickinson	2	0	0	0	1	3
Eaton	1	1	0	0	5	7
Emmet	2	0	0	0	0	2
Genesee	59	10	7	12	14	102
Gladwin	4	0	0	0	1	5
Gogebic	0	0	0	0	1	1
Grand Traverse	8	1	1	0	3	13
Gratiot	1	1	1	0	3	6
Hillsdale	4	0	1	1	1	7
Houghton	0	0	0	1	0	1
Huron	3	1	1	0	1	6
Ingham	25	2	2	5	8	42
Ionia	7	2	1	1	5	16
Iosco	5	0	0	0	1	6
Isabella	10	0	0	0	0	10
Jackson	20	4	1	3	4	32
Kalamazoo	35	7	1	2	5	50
Kalkaska	0	0	0	0	1	1
Kent	71	10	8	15	12	116
Lapeer	6	2	2	0	2	12
Lenawee	6	0	0	1	6	13
Livingston	9	0	0	3	3	15
Macomb	64	6	6	8	17	101
Manistee	2	0	0	1	0	3
Marquette	4	0	0	1	3	8
Mason	4	2	1	1	1	9
Mecosta	4	1	0	1	1	7
Menominee	1	0	0	0	1	2

Appendix C
Total Number of Deaths Among Michigan Residents, Ages 0-18, by County of Residence and Age Group, 2001

County of Residence	Age Group by Years					Total
	Under 1	1 - 4	5 - 9	10 - 14	15 - 18	
Midland	7	1	0	1	2	11
Missaukee	0	0	0	0	1	1
Monroe	7	3	2	1	6	19
Montcalm	6	1	3	0	3	13
Montmorency	0	0	0	0	1	1
Muskegon	25	4	3	6	4	42
Newaygo	3	0	0	0	4	7
Oakland	96	13	10	12	19	150
Oceana	3	1	0	0	2	6
Ogemaw	1	0	0	0	1	2
Osceola	3	2	0	0	1	6
Oscoda	0	1	0	0	0	1
Otsego	0	1	1	1	0	3
Ottawa	28	5	3	4	6	46
Presque Isle	3	0	0	0	1	4
Roscommon	0	1	0	0	2	3
Saginaw	27	2	0	1	8	38
St. Clair	15	1	1	5	5	27
St. Joseph	13	3	1	0	3	20
Sanilac	5	0	0	1	2	8
Schoolcraft	1	0	0	0	0	1
Shiawassee	5	2	1	3	4	15
Tuscola	4	2	0	4	3	13
Van Buren	10	0	0	1	6	17
Washtenaw	34	5	3	3	4	49
Wayne*	289	38	30	36	68	462
Wexford	1	1	1	0	2	5
Unknown*	0	0	0	0	0	1
Total	**1051**	**159**	**105**	**148**	**295**	**1760**

*One no answer

Appendix D
Total Number of Deaths Among Michigan Residents, Ages 0-18, by County of Residence and Year of Death, 1990-2001

County of Residence	Year of Death												2001 Population, Ages 0-18	2001 Rate per 100,000 Population
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001		
Alcona	1	1	0	2	2	1	0	2	0	0	2	0	2267	*
Alger	1	0	3	1	1	1	1	2	2	1	1	2	2051	*
Allegan	20	13	18	20	21	19	23	16	29	19	17	21	31786	66.07
Alpena	4	9	2	12	2	3	7	4	5	14	3	4	7612	*
Antrim	2	3	5	3	5	4	6	7	0	2	3	3	5867	*
Arenac	3	4	4	4	3	2	2	1	5	0	3	2	4078	*
Baraga	2	1	0	0	2	2	1	3	1	1	1	0	2050	*
Barry	18	12	8	13	10	8	6	15	14	14	11	13	15960	81.45
Bay	25	30	36	27	15	23	21	14	14	11	15	21	27758	75.65
Benzie	6	2	3	1	3	5	2	3	0	2	1	1	3959	*
Berrien	56	48	37	34	42	47	36	39	30	42	35	36	43805	82.18
Branch	17	10	11	13	9	6	9	6	9	9	6	12	12030	99.75
Calhoun	32	35	36	42	26	25	24	46	22	25	28	40	37472	106.75
Cass	8	5	15	14	12	7	7	9	10	3	7	4	13469	*
Charlevoix	3	4	3	3	4	7	8	6	6	5	3	3	6993	*
Cheboygan	11	7	6	9	5	6	3	6	6	2	5	4	6523	*
Chippewa	4	6	6	5	7	9	5	6	4	3	7	7	8622	81.19
Clare	5	4	4	6	8	5	7	6	5	7	6	1	7877	*
Clinton	13	11	10	8	7	11	4	11	8	8	10	8	18777	42.61
Crawford	6	3	4	6	3	4	4	1	1	3	5	3	3617	*
Delta	5	5	2	4	8	4	3	3	2	2	8	8	9365	85.42
Dickinson	1	6	3	0	3	1	1	3	3	1	2	3	7017	*
Eaton	27	16	11	17	17	14	21	5	14	12	15	7	28200	24.82
Emmet	6	6	9	7	2	4	2	6	2	6	6	2	8310	*
Genesee	155	144	129	129	147	122	136	136	119	120	115	102	124857	81.69
Gladwin	10	4	4	0	4	10	6	4	6	7	2	5	6328	*
Gogebic	0	4	1	2	1	2	0	5	0	1	1	1	3613	*
Gr. Traverse	7	19	17	14	8	8	13	11	12	11	11	13	20665	62.91
Gratiot	4	10	8	11	10	11	9	7	6	7	6	6	10542	56.92
Hillsdale	12	9	11	13	17	8	6	14	8	13	12	7	12764	54.84
Houghton	5	4	6	4	4	5	3	5	4	7	2	1	8494	*
Huron	5	12	14	4	7	6	7	4	8	5	10	6	8914	67.31
Ingham	80	61	58	63	63	49	50	42	45	40	49	42	71797	58.50
Ionia	19	29	15	14	11	9	11	13	4	6	18	16	17276	92.61
Iosco	3	5	1	5	8	5	2	1	3	1	2	6	6268	95.72
Iron	3	2	2	1	0	3	0	0	3	2	3	0	2700	*
Isabella	12	11	14	9	13	11	8	7	13	6	7	10	14653	68.25
Jackson	44	37	33	31	34	24	30	31	41	36	30	32	42550	75.21
Kalamazoo	47	61	55	49	32	40	39	44	57	28	44	50	61763	80.95
Kalkaska	4	1	5	7	4	2	5	4	3	3	3	1	4428	*
Kent	135	140	113	137	136	119	125	96	105	116	122	116	171867	67.49
Keweenaw	0	0	0	3	0	0	1	0	0	0	0	0	530	*
Lake	6	3	4	3	5	3	3	4	2	1	4	0	2760	*
Lapeer	15	22	16	18	8	9	12	24	19	17	13	12	25441	47.17
Leelanau	2	6	3	6	3	1	3	1	1	1	4	0	5351	*
Lenawee	20	12	20	26	13	15	10	12	16	20	13	13	26681	48.72
Livingston	34	22	15	27	13	13	25	14	23	27	18	15	47598	31.51
Luce	3	0	3	0	0	0	2	3	0	1	2	0	1560	*
Mackinac	0	0	0	1	1	1	5	3	0	1	3	0	2625	*

Appendix D
Total Number of Deaths Among Michigan Residents, Ages 0-18, by County of Residence and Year of Death, 1990-2001

County of Residence	Year of Death												2001 Population, Ages 0-18	2001 Rate per 100,000 Population
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001		
Macomb	115	120	106	116	102	112	107	101	101	103	103	101	199665	50.58
Manistee	2	4	6	3	1	5	4	2	5	4	0	3	5778	*
Marquette	8	9	14	13	14	11	10	12	9	6	3	8	14466	55.30
Mason	5	2	4	15	3	4	5	8	6	6	7	9	7148	125.91
Mecosta	15	18	10	9	11	4	5	6	14	5	8	7	10029	69.80
Menominee	2	2	2	2	4	1	4	1	3	1	4	2	6178	*
Midland	13	17	15	13	22	10	15	14	16	20	8	11	23159	47.50
Missaukee	3	6	6	4	1	2	3	3	2	2	3	1	4088	*
Monroe	19	20	21	9	16	13	22	15	13	7	13	19	41433	45.86
Montcalm	13	15	12	11	10	13	11	12	17	24	12	13	17270	75.28
Montmorency	3	2	0	2	3	1	1	1	0	1	0	1	2205	*
Muskegon	41	60	41	32	43	36	36	39	36	47	22	42	48896	85.90
Newaygo	8	5	9	12	12	9	8	11	8	6	6	7	14512	48.24
Oakland	196	207	212	181	175	178	146	169	166	152	179	150	313310	47.88
Oceana	5	9	6	9	4	5	5	4	7	2	7	6	7856	76.37
Ogemaw	7	6	6	4	4	6	7	3	9	2	5	2	5235	*
Ontonagon	0	1	3	3	0	1	1	0	1	0	0	0	1598	*
Osceola	5	4	7	2	2	2	4	5	9	6	7	6	6464	92.82
Oscoda	4	4	0	2	3	4	1	1	4	1	4	1	2287	*
Otsego	4	4	2	2	3	2	6	5	3	4	5	3	6503	*
Ottawa	36	38	34	37	38	40	39	31	44	39	44	46	72806	63.18
Presque Isle	4	1	3	2	0	7	0	0	2	4	5	4	3091	*
Roscommon	2	5	2	7	2	4	4	4	5	7	2	3	5304	*
Saginaw	80	70	74	57	50	48	49	50	47	41	44	38	58007	65.51
St. Clair	39	34	28	33	39	19	32	32	15	30	26	27	45778	58.98
St. Joseph	23	13	15	11	11	18	11	10	13	8	10	20	17871	111.91
Sanilac	9	12	16	5	16	13	7	3	7	11	11	8	12299	65.05
Schoolcraft	1	2	1	1	1	2	3	0	4	0	1	1	2069	*
Shiawassee	15	18	10	15	11	11	10	13	13	6	8	15	19851	75.56
Tuscola	10	16	6	21	21	18	17	17	13	13	15	13	15981	81.35
Van Buren	25	28	17	20	14	19	15	16	25	21	13	17	22286	76.28
Washtenaw	53	53	54	42	44	50	34	38	34	41	51	49	79606	61.55
Wayne	976	893	898	769	725	659	607	578	568	538	527	462	596634	77.43
Wexford	4	7	4	5	7	8	5	4	5	12	8	5	8409	*

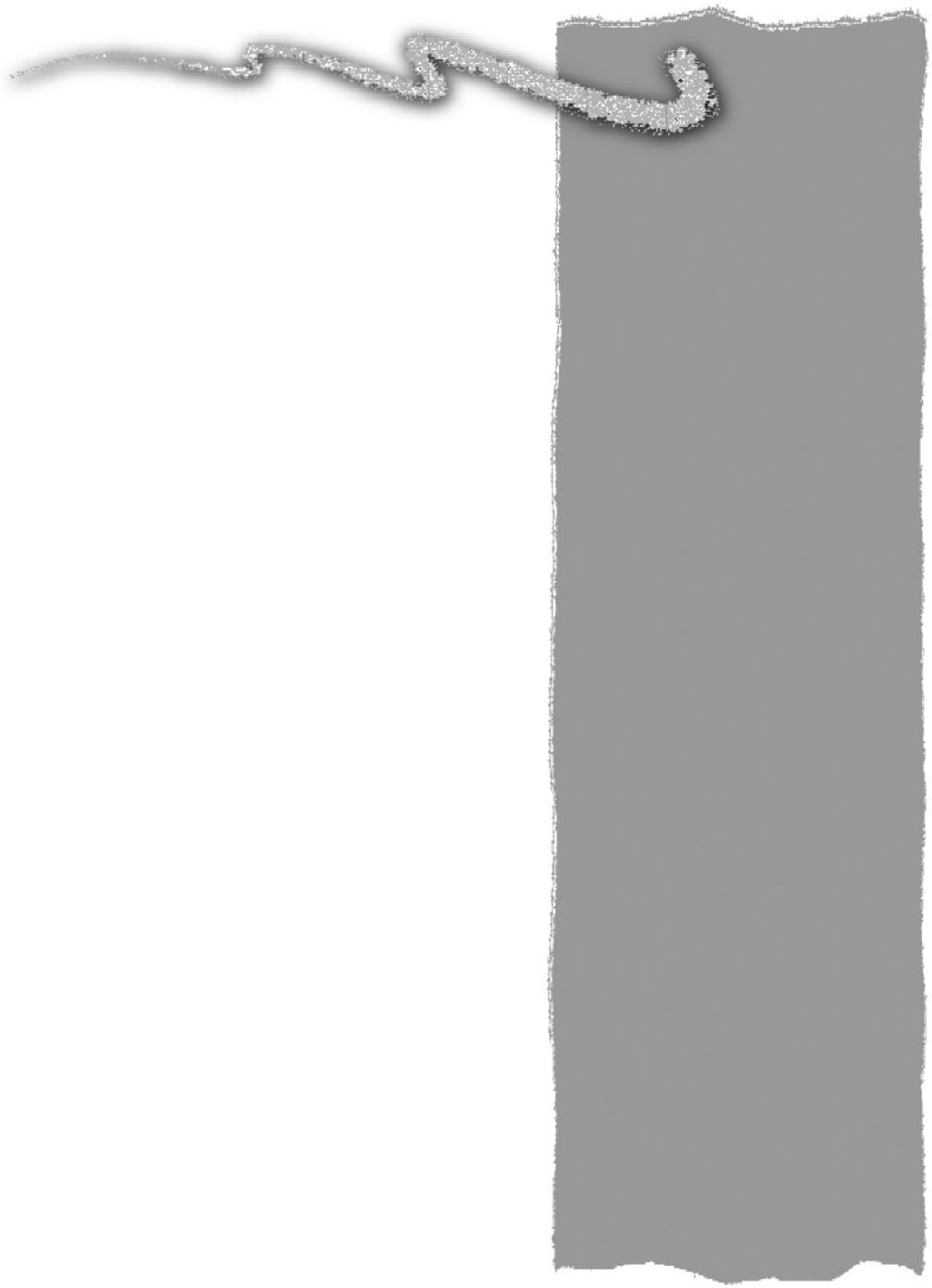
*Rates are too small to calculate (<6 cases).

Appendix E
Local Child Death Review Team Coordinators, 2001

County	Coordinator(s)	Agency
Alcona	Doug Ellinger, Sheriff	Alcona County Sheriff's Department
Alger	Patricia Webster, Nursing Administrator	LMAS District Health Department
Allegan	Cathy L. Weirick, Executive Director	Allegan County CA/N Council
Alpena	Cindy Shackleton	Alpena County FIA
Antrim	Bob Lewis, Services Supervisor	Antrim County FIA
Arenac	Brian Millikin	Arenac County FIA
Baraga-Houghton-Keweenaw	Dr. Gail Shebuski, Health Officer/Medical Director	Western UP Health Department
Barry	Dr. Jeff Chapman, Medical Examiner	Barry County Medical Examiner
	Ann Wilson	Barry County Medical Examiner's Office
Bay	Dominic Wright, Victim's Advocate	Bay County Prosecutor's Office
Benzie	Jenifer Murray, Personal Health Director	Benzie-Leelanau District Health Dept.
Berrien	Margaret Penninger, Assistant Prosecutor	Berrien County Courthouse
Branch	Vickie Nimmo, CPS Supervisor	Branch County FIA
Calhoun	Sara Cauffiel, CDR/FIMR Coordinator	Calhoun County Health Department
Cass	Ruth Andrews, Director	Woodlands Behavioral HC Network
Charlevoix-Emmet	Rhonda Buchanan	Charlevoix Emmett FIA
	Jenny Deegan	Charlevoix Prosecutor's Office
Cheboygan	Dr. Howard Otto, Medical Examiner	Cheboygan Co Medical Examiners Office
Chippewa	Vicki Schuurhuis, Clinical Director, OB/Nursery	War Memorial Hospital
Clare	Kathy Kent, Nursing Supervisor	Central Michigan District Health Dept
Clinton	Mary Pino, Chief Assistant Prosecutor	Clinton County Courthouse
Crawford	Amelia Afsari, Epidemiologist	District Health Department #10
Delta	Tina Bart, Director of Community Health Promotion	Delta-Menominee District Health Dept
Dickinson-Iron	Carol Thornton	Dickinson-Iron County FIA
Eaton	Linda Potter, RN	Barry-Eaton District Health Department
Genesee	Dr. Gary Johnson, Medical Director	Genesee County Health Department
	Leslie Lathrop, RN	Genesee County Health Department
Gladwin	Robert Adams, Director	Gladwin County FIA
Gogebic	Dr. Charles Iknayan, Medical Examiner	Grandview Hospital
Grand Traverse	Deanna Kelly	Grand Traverse County Health Dept
Hillsdale	Valerie White, Assistant Prosecutor	Hillsdale County Prosecutor's Office
Huron	Mark Gaertner, Prosecuting Attorney	Huron County Prosecutor's Office
	Elizabeth Weisenbach, Assistant Prosecutor	Huron County Prosecutor's Office
Ingham	Dr. Dean Sienko, Medical Examiner	Ingham County Health Department
Ionia	Tim Click, Children's Services	Ionia/Montcalm County FIA
Iosco	Carla Grezeszak, Family Division Administrator	Iosco County Family Court
Isabella	Mari Pat Terpening, Personal Health Svcs Supervisor	Central Michigan District Health Dept
Jackson	Dottie-Kay Bowersox, Deputy Health Office	Jackson County Health Department
Kalamazoo	Joni Idzkowski, Personal Health Services Supervisor	Kalamazoo Human Services Department
	Jeff Fink, Assistant Prosecuting Attorney	Office of the Prosecuting Attorney
Kalkaska	Amelia Afsari, Epidemiologist	District Health Department #10
Kent	Tracy Cyrus, Child Protection Team	DeVos Children's Hospital
	Carmen Perez	Kent County Health Department
Lake	Amelia Afsari, Epidemiologist	District Health Department #10
Lapeer	D/Sgt. Nancy Stimson	Lapeer County Sheriff's Department
	Gerald Redman, Acting Program Manager	Lapeer County FIA
Leelanau	Sara Brubaker, Prosecuting Attorney	Leelanau County Prosecutor's Office
	Laurie laCross, Victims Advocate	Leelanau County Prosecutor's Office
Lenawee	Larry W. Stephens, Health Officer	Lenawee County Health Department
Livingston	Dr. Stan Reedy, Medical Director	Livingston County Health Department
	Elaine Brown, Personal and Prevention Health Services	Livingston County Health Department
Luce	Dr. James Terrian, Medical Examiner/Director	LMAS District Health Department
	Patricia Webster, Nursing Administrator	LMAS District Health Department

Appendix E
Local Child Death Review Team Coordinators, 2001

County	Coordinator(s)	Agency
Mackinac	Sgt. Mark Wilk	St. Ignace Police Department
Macomb	Dr. Kevin Lokar, Medical Director	Macomb County Health Department
Manistee	Ford Stone, Chief Prosecutor	Manistee County Courthouse
Marquette	Diane Curry, Health Educator	Marquette County Health Department
Mason	Richard Trier, Service Manager	Mason County FIA
Mecosta	Amelia Afsari, Epidemiologist	District Health Department #10
Menominee	Renee Barron	Delta-Menominee District Health Dept
Midland	Dr. Dennis Wagner, Deputy Medical Examiner	Mid-Michigan Regional Medical Center
	Andrea Muladore, ACSW	Mid-Michigan Regional Medical Center
Missaukee-Wexford	Dave VanHouten, Children's Services Supervisor	Missaukee-Wexford FIA
	Anne Young, RN	District Health Department #10
Monroe	Sandie Pierce	Monroe CMH Authority
Montcalm-Gratiot	Jamie Lovelace, Children's Services Supervisor	Ionia Montcalm District FIA
Montmorency	Denise Benson, Services Supervisor	Montmorency County FIA
Muskegon	Joyce L. deJong, DO, Chief ME	Muskegon County Health Department
	Roberta Skinner, Records Office	Muskegon County Health Department
Newaygo	Richard W. Peters, MD	Newaygo County Medical Examiners
	Amelia Afsari, Epidemiologist	District Health Department #10
Oakland	Ronald E. Covault, Deputy Prosecutor	Oakland County Prosecutors Office
	James Halushka, Deputy Prosecutor	Oakland County Prosecutors Office
Oceana	Amelia Afsari, Epidemiologist	District Health Department #10
Ogemaw	Dr. James Hall, Pathologist/ME	HistoDiagnostic
Ontonagon	Sue Gilbault, Outreach Coordinator	Barba Kettle Gundlach Shelter
	Janet Holstrom	Ontonagon County FIA
Osceola	Kaye Frederick	Oscola County Probate Court
Oscoda	Joan Fox, Services Supervisor	Oscoda County FIA
Otsego	Kevin Hessselink, Prosecuting Attorney	Otsego County Prosecutor's Office
Ottawa	Tom Perna, CPS Supervisor	Ottawa County FIA
Presque Isle	John Keller	Alpena County FIA
Roscommon	Cynde Kochensparger, Nursing Supervisor	Central Michigan District Health Dept
Saginaw	Kristan Outwater, MD	Partners in Pediatrics
	Debbie Tubb, ME Investigator	Saginaw County Health Department
St. Clair	Amy Smith, Planning Officer	Community Mental Health
St. Joseph	Elizabeth O'Dell, Collaborative Coordinator	St. Joseph Co Human Svcs Commission
Sanilac	Dennis Smallwood, DO, Medical Examiner/Director	Sanilac County Health Department
Schoolcraft	Amy Powers, RN	LMAS Dist Health Department
Shiawassee	Cindy Eberhard, CPS Supervisor	Shaiwasee County FIA
Tuscola	Dennis Smallwood, DO, Medical Examiner/Director	Tuscola County Health Department
Van Buren	Trooper Paula Doan	Michigan State Police
	Sandy Nicholas	Van Buren/Cass District Health Dpt.
Washtenaw	Susan Cares	Washtenaw County Human Services
Wayne	Pat Soares	Wayne County Health Department



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